ORDER NO. VRD8609141

# Service Manual

*General Description*
*Adjustment Procedures*
*Block / Schematic Diagrams*
*Exploded Views / Parts List*

**Panasonic** VHS PAL HQ

VHS Movie

## NV-M5 E EG B

AC Adaptor

## VW-AM5 E EG B

System Carrying Case

## VW-SHM5

M5
Panasonic
Panasonic
CCD
FOCUS
WHITE BALANCE
DATE
FADE
BACK LIGHT

**NV-M5**

Panasonic
Video AC Adaptor
VW-AM5
CHARGE
STAND BY
OPERATE
TV
VTR
CHARGE

**VW-AM5**

Panasonic
VHS MOVIE

**VW-SHM5**

**Matsushita Electric Trading Co., Ltd.**
P.O. Box 288, Central Osaka Japan

# INTRODUCTION

*This service manual contains technical information which will allow service technicians to understand and service this model.*

*Section 1 presents you with some general information of features and controls, enabling you to become familiar with each function.*

*Section 2 contributes to your mechanical and electrical adjustment as well disassembly and replacement procedures.*

*In the case of very common information relating to other models like mechanical adjustments, please refer to each service manual.*

*Section 3 contains block diagrams which offers you information for checking and understanding each circuit. Schematic diagrams which give you detailed information such as waveforms, voltage data, function e.t.c...*

*Section 4 contains exploded views and parts list.*

*Please place orders using the parts list and not the drawing reference numbers.*

*If the circuit is changed or modified, this information will be followed by supplementary service manual to be filed with original service manual.*

# Technical Information

## Subject: How to make easier servicing

1.How to check the following circuit boards.

Process C.B.A./Process Sub(1) C.B.A./
Auto Focus C.B.A./AWT C.B.A.

The newly developed extention cables that give more efficient and quick servicing are allowed to remove the above circuit boards for checking.
The connecting condition of extention cables(VFK0380,VFK0381) are shown in Fig.1.

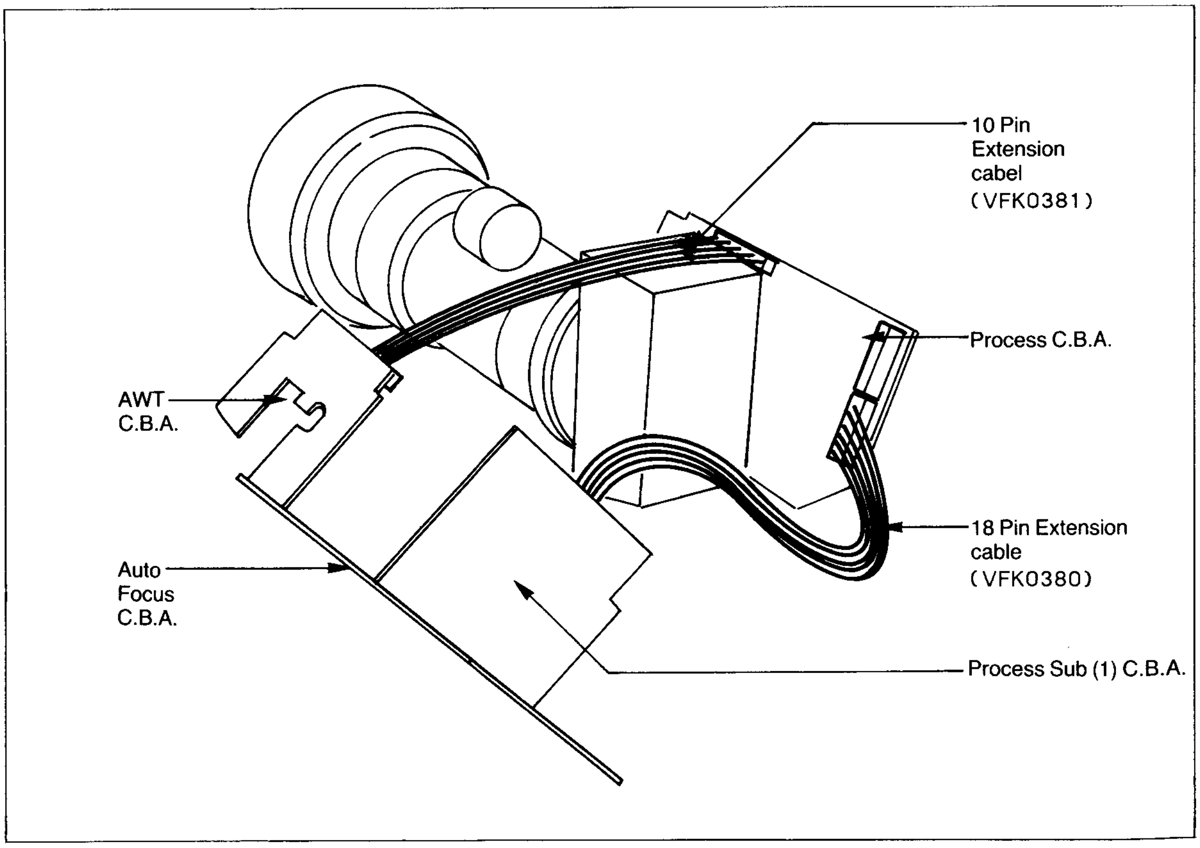

10 Pin
Extension
cabel
(VFK0381)
Process C.B.A.
AWT
C.B.A.
18 Pin Extension
cable
(VFK0380)
Auto
Focus
C.B.A.
Process Sub (1) C.B.A.

Fig.1

## 2.How to check or adjust the sensor(1) C.B.A. and sensor(2) C.B.A.

When checking or adjusting the sensor(1) C.B.A. and sensor(2) C.B.A.,these C.B.A. in a shield case are possible to remove them from the camera block after removing process C.B.A. and auto focus C.B.A. and the connection is made using newly developed extention cables that give more efficient and quick servicing.
The connecting condition of extention cables (VFK0378,VFK0379,VFK0380 and VFK0381) are shown in Fig.2.

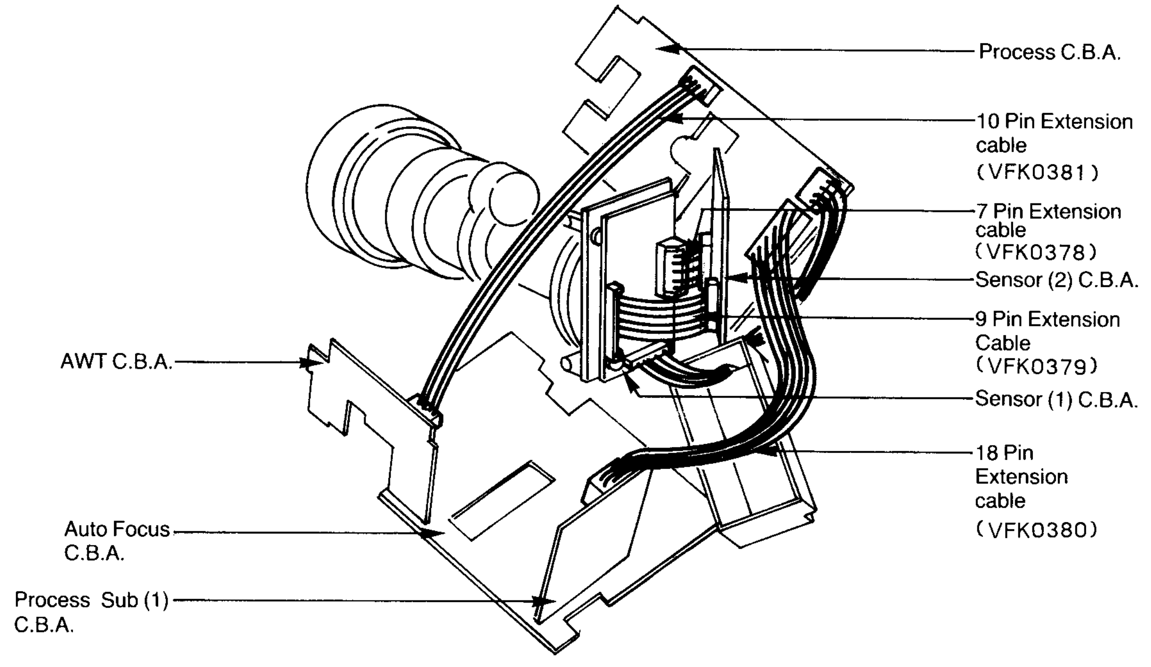

Process C.B.A.
10 Pin Extension cable (VFK0381)
7 Pin Extension cable (VFK0378)
Sensor (2) C.B.A.
9 Pin Extension Cable (VFK0379)
Sensor (1) C.B.A.
18 Pin Extension cable (VFK0380)
AWT C.B.A.
Auto Focus C.B.A.
Process Sub (1) C.B.A.

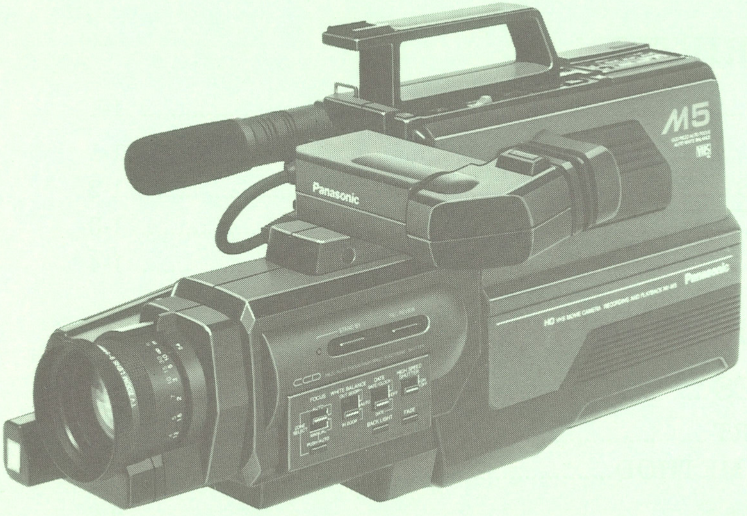
Fig. 2

VHS Movie

# NV-M5 E EG B

System Carrying Case

# VW-SHM5



NV-M5

VW-SHM5

## SPECIFICATIONS

| ITEM | SPECIFICATION |
|---|---|
| POWER | Source: BATTERY; DC 12 V<br>Consumption; Recording mode; 7.9 W (Battery operation)<br>Stand-by mode; 1.0 W (Battery operation) |
| RECORDING SYSTEM | 4 rotary heads, helical scanning system<br>PAL |
| TAPE FORMAT | VHS Cassette Tape (Tape width 12.7 mm) |
| TAPE SPEED | 23.39 mm/s<br>Record/Playback Time<br>3 hours with 180 min. type tape<br>FF/REW Time<br>less than 12 min. with 180 min. type tape |
| CAMERA | PICK-UP ELEMENT: CCD (Charge Coupled Device) |
|  | STANDARD ILLUMINATION: 1,400 lux |
|  | MINIMUM REQUIRED ILLUMINATION: 10 lux |
|  | LENS: Built-in 6 : 1 Power Zoom Lens with MACRO Function, Auto Iris, Auto Focus System, F1.2 (8.5～51 mm), Filter Diameter/$\phi$49 mm |
|  | VIEW FINDER: 2/3″ B/W Electric View Finder |
|  | WHITE BALANCE: Auto White Balance/Indoor/Outdoor |

| ITEM | SPECIFICATION |
|---|---|
| VIDEO | HEADS: 4 rotary heads |
|  | OUTPUT: Adaptor (Multi); 1.0 Vp-p 75Ω terminated |
| AUDIO | HEAD: 1 Stationary head (Normal Audio) |
|  | INPUT: MIC IN (M3); −70 dB, 4.7 kΩ unbalanced |
|  | OUTPUT: Adaptor (Multi); −8 dB 600Ω unbalanced |
| WEIGHT | Approx. 2.5 kg (without Battery Pack) |
| DIMENSIONS | 97(W) × 181(H) × 398(D) mm<br>with view finder turned down<br>(without carrying handle) |
| STANDARD ACCESSORIES | 1 pc. Battery Pack<br>1 pc. Battery Pack Charging Connector<br>1 pc. DIN-DIN Coaxial Cable<br>1 pc. AC Adaptor (VW-AM5)<br>1 pc. Shoulder Strap<br>1 pc. Earphone<br>1 pc. AV Converter Connector<br>1 pc. System Carrying Case (NV-M5B only) |
| OPTIONAL ACCESSORIES | 1 pc. Pause Remote Control Unit (VW-RM1)<br>1 pc. Car Battery Cord (VW-ACM1)<br>1 pc. System Carrying Case (VW-SHM5) (NV-M5E/EG only) |

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

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# SECTION 1
# GENERAL DESCRIPTION

## 1. HOW TO USE VHS MOVIE

## 1-1. FEATURES

### 1. Piezo Auto Focus System

This innovative new Auto Focus System uses a fully camera-internal system consisting of a sophisticated microprocessor and a special piezo-element-controlled focusing system. It continuously analyzes the focusing conditions and determines and adjust the optimum focus setting based on the picture information contained in the light that enters through the lens.
Besides increased sensitivity, this new Auto Focus System offers very fast response even to extremely big changes in shooting distance. For added versatility, the NV-M5 is also equiped with a 2-step focusing zone selector that lets you preset the size of the measuring zone for the Auto Focus System to assure optimum adjustment in any kind of shooting situation.

### 2. The VHS Movies Uses Standard VHS Video Cassettes

The VHS Movie uses the same video cassette tapes as any VHS-system video recorder, thus assuring complete compatibility and allowing up to 4 hours recording on a single cassette (NV-E240).

### 3. Playback of Tapes

The VHS Movie offers not only camera recording but a range of different playback functions as well: normal playback, Cue & Review and Still. Playback is possible on the built-in viewfinder or on a connected TV monitor or a TV set.

### 4. VHS Movie Camera

This VHS Movie is a tremendously versatile video system for both camera recording and playback in a single unit.

### 5. Compact, lightweight and Superportable

Weighting only 2.5kg (without battery pack), the VHS Movie is extremely lightweight and handy to use.

### 6. 3-Way Power Supply

The VHS Movie can be operated on three different power sources: rechargeable battery pack, AC adaptor or car battery cord.

### 7. Full Auto White Balance Adjustment Function

This function automatically adjusts the white balance according to the illumination of the scene that is being shot.

### 8. Operation Information Center in the Electronic Viewfinder (E.V.F)

Easy-to see indications in the viewfinder inform you of the camera operating conditions during shootig, so you don't have to look away from the viewfinder. The indication include: Date,Memory, Tape Counter, Recording and various warnings.

### 9. Rec Review Function

After you finish shooting a scene and tape is stopped in the pause mode, press the Rec Review Button. The tape will automatically rewind for a few seconds, and the end of the recorded scene will then be played back to let you confirm that the recording conditions are satisfactory.

### 10. 6× Power Zoom Lens and Macro Feature

The power zoom lens allows smooth zoom-in and zoom-out shots and quick adjustment of the picture angle to anywhere from wide to telephoto.

### 11. Standby Function

Pushing the Standby Button during every stop in shooting lasting more than a few minutes, saves power and makes your battery pack last longer.

### 12. High Speed Shutter Function

When shooting fast-action events like car or horse races or other sports scenes, selecting the high speed shutter offers special advantages. When later watching these recordings using the Super Still, Super Still Advance or Super Fine Slow Motion functions of an advanced type VTR, the result will be extremely stable pictures with superior sharpness and crisp edges.

### 13. Audio Dubbing Function

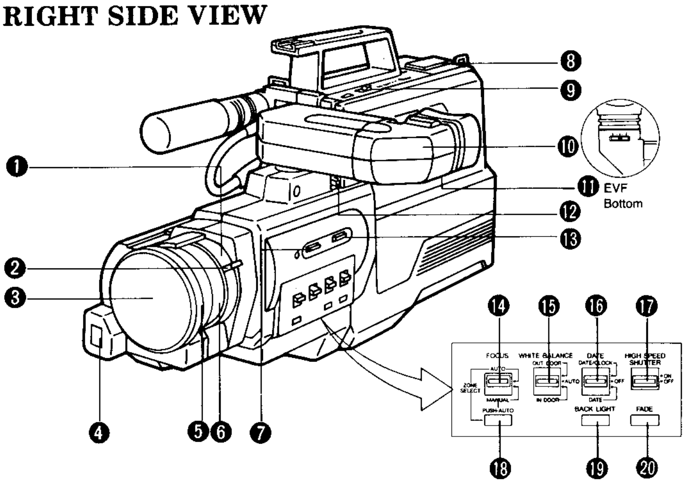
The Audio Dubbing function of the VHS Movie makes it possible to replace the sound that was recorded during shooting by a new recording of narration, background music or special sound effects using either the built-in or an external microphone.

### 14. HQ (High Quality) Picture System

Video recoders carrying the HQ symbol mark feature the new VHS High Quality Picture System. This system assures compatibility with VTRs that use the conventional VHS system.

## 1-2. CONTROLS AND COMPONENTS

### RIGHT SIDE VIEW


❽
❾
❿
⓫ EVF Bottom
⓬
⓭
❶
❷
❸
⓮ ⓯ ⓰ ⓱
FOCUS
WHITE BALANCE
DATE
HIGH SPEED SHUTTER
AUTO
ZONE SELECT
MANUAL
PUSH AUTO
OUT DOOR
IN DOOR
DATE/CLOCK
OFF
ON
BACK LIGHT
FADE
❹ ❺❻ ❼
⓲ ⓳ ⓴

❶ **Zoom Ring**

❷ **Manual Zoom Lever**

❸ **Lens Cap**

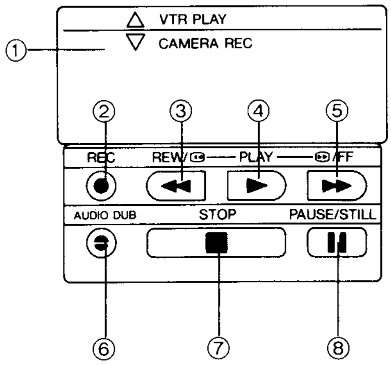
❹ **White Balance Sensor Window**

❺ **Leus Hood**

❻ **Focus Ring**

❼ **Standby Buttom with Indicator**

❽ **Tape Running Buttons**


△ VTR PLAY
▽ CAMERA REC
①
② ③ ④ ⑤
REC
REW
PLAY
FF
AUDIO DUB
STOP
PAUSE/STILL
⑥ ⑦ ⑧

① Camera/VTR Operation Selector Cover

Before starting camera recording, slide this cover close to conceal the Tape Running Buttons and render them inoperative.
For playback, audio dubbing, tape copying and other VTR operations, open this cover. This renders the Start/Stop Button and other operation controls for camera recording inoperative.

② Record Button

③ Rewind/Review Buttin

④ Play Button

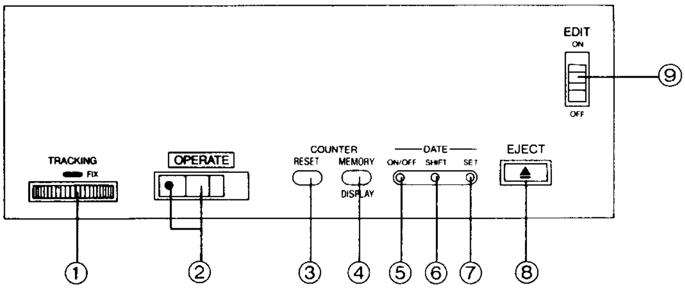
⑤ Fast Forward/Cue Button

⑥ Audio Dubbing Button

⑦ Stop Button

⑧ Pause/Still Button

❾ **General Operation Controls**


EDIT
ON
OFF
⑨
TRACKING
FIX
OPERATE
COUNTER
RESET
MEMORY
DISPLAY
DATE
ON/OFF
SHIFT
SET
EJECT
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① Tracking Control

② Operation On/Off Switch with Indicator

③ Counter Reset Button

④ Memory Button

⑤ Date On/Off Button

⑥ Date Set Button

⑦ Date Shift Button

⑧ Eject Button

⑨ Edit Switch

❿ **E.V.F (Electric Viewfinder)**

⓫ **Eyepiece Corrector Control**

⓬ **EVF Lock Switch**

⓭ **Rec Review Button**

⓮ **Focus Mode Selector**

⓯ **White Balance Mode Selector**

⓰ **Date Function Selector**

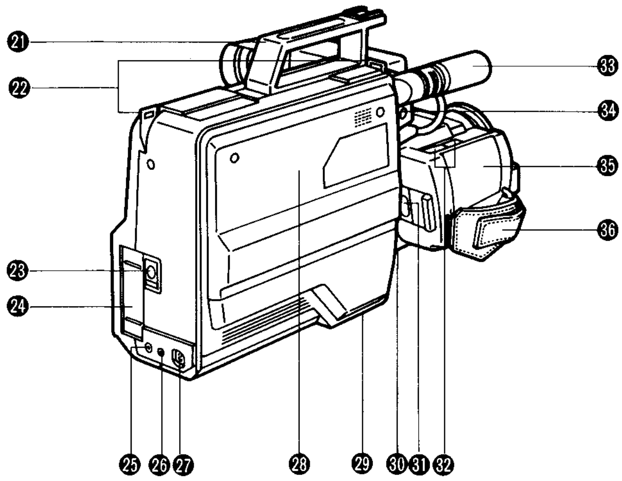
⓱ **High Speed Shutter Selector**

⓲ **Focus Adjusting Button/Zone Selector**

⓳ **Back Light Button**

⓴ **Fade-In/Fade-Out Button**

## LEFT SIDE VIEW


㉑
㉒
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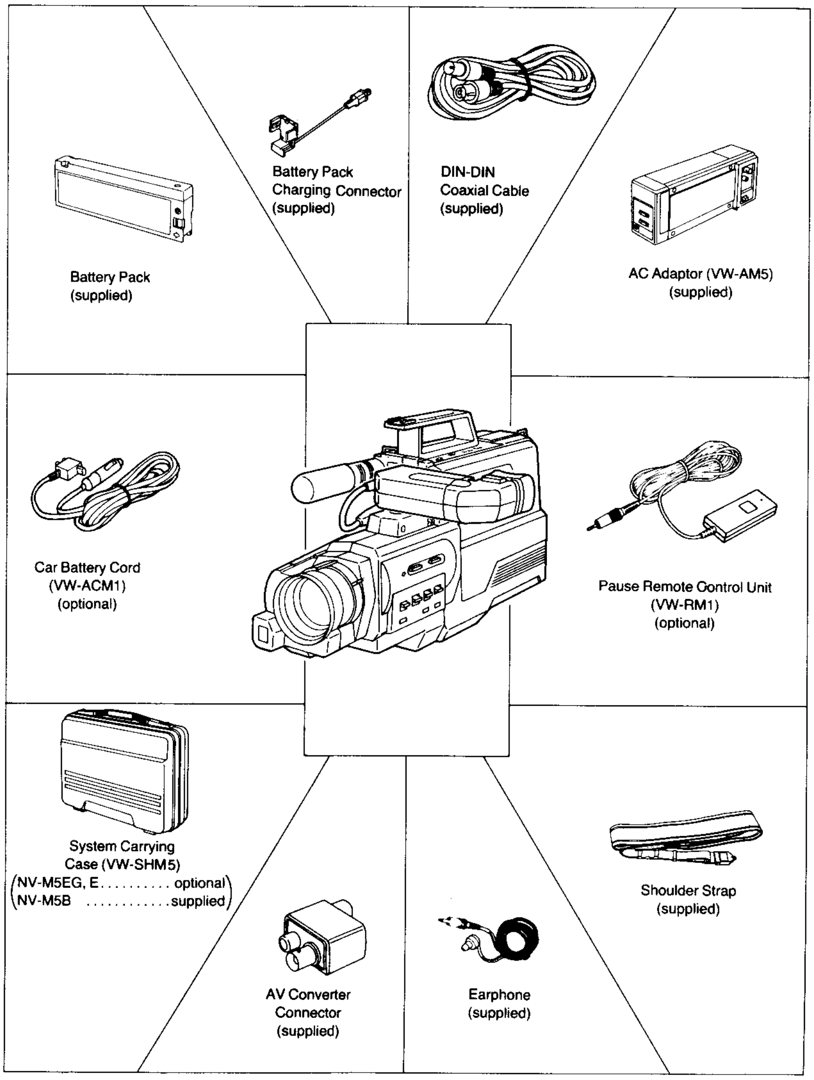
- ㉑ **Carrying Handle**
- ㉒ **Metal Fitting for Shoulder Strap**
- ㉓ **Battery Eject Button**
- ㉔ **Battery Compartment**
- ㉕ **Earphone Socket**
- ㉖ **Remote Control Socket**
- ㉗ **Adaptor Socket**
- ㉘ **Cassette Compartment**
- ㉙ **Tripod Receptacle**
- ㉚ **Battery Compartment for Auto Date**
- ㉛ **Start/Stop Button**
- ㉜ **Power Zoom Control**
- ㉝ **Built-in Microphone**
- ㉞ **Microphone Socket**
- ㉟ **Handgrip**
- ㊱ **Grip Belt**

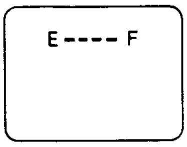
## 1-3. VHS MOVIE SYSTEM


Battery Pack
(supplied)
Battery Pack
Charging Connector
(supplied)
DIN-DIN
Coaxial Cable
(supplied)
AC Adaptor (VW-AM5)
(supplied)
Car Battery Cord
(VW-ACM1)
(optional)
Pause Remote Control Unit
(VW-RM1)
(optional)
System Carrying
Case (VW-SHM5)
(NV-M5EG, E.......... optional)
(NV-M5B ...........supplied)
AV Converter
Connector
(supplied)
Earphone
(supplied)
Shoulder Strap
(supplied)

# 1-4. EVF INDICATIONS

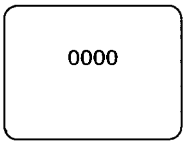
The following indications are displayed in the Electronic Viewfinder (EVF) to inform you of the operating conditions of the VHS Movie.

### 1. Remaining Battery Power Indication



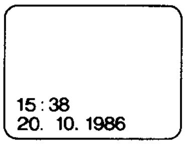
The "-" indications begin to disappear from right to left as the power of the battery pack weakens.
When three "-" marks have disappeared, the warning indication "BATTERY" will be displayed.
This indication will not be recorded.

### 2. Tape Counter Indication



The displayed number changes accordin to the tape movement. The tape counter operates even when the figures are not displayed in the EVF. The tape counter indication is memorized even after the VHS Movie is turned off.
This indication will not be recorded.

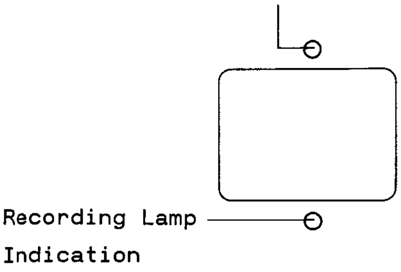
### 3. Clock/Date Indication



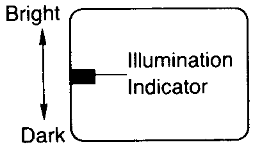
A built-in digital clock, that is operated on batteries having a service life of at least one year, lets you call up the correct time and/or date on the EVF during shooting and simultaneously superimpose it on the picture being recorded.

### 4. Indication Lamps

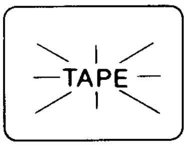
Manual White Balance Indication Lamp.
This lamp is lit when the White Balance Mode Selector is set to "INDOOR" or "OUTDOOR".



### 5. Warning/Alarm Indications

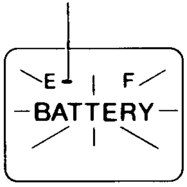


This indicator shows the brightness of the illumination. When the High Speed Shutter Selector is set to "ON", it flashes.

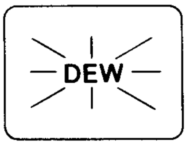


It is impossible to record because the erasure prevention tab of the cassette is not intact.

Remaining Battery Power Indication



There is little battery power left. The VHS Movie will be turned off in a few minutes. Replace the battery pack.



When condensation has formed inside the VHS Movie, the "DEW" indication will flash and a few seconds later, the unit will turn itself off.

# SECTION 2
# ADJUSTMENT PROCEDURES

## 2-1. DISASSEMBLY PROCEDURES

### 2-1-1. DISASSEMBLY FLOW CHART

This flow chart indicates disassembly steps for the cabinet parts and the P.C. boards in order to find the items necessary for servicing.
When reassembling perform the steps in the reverse order.

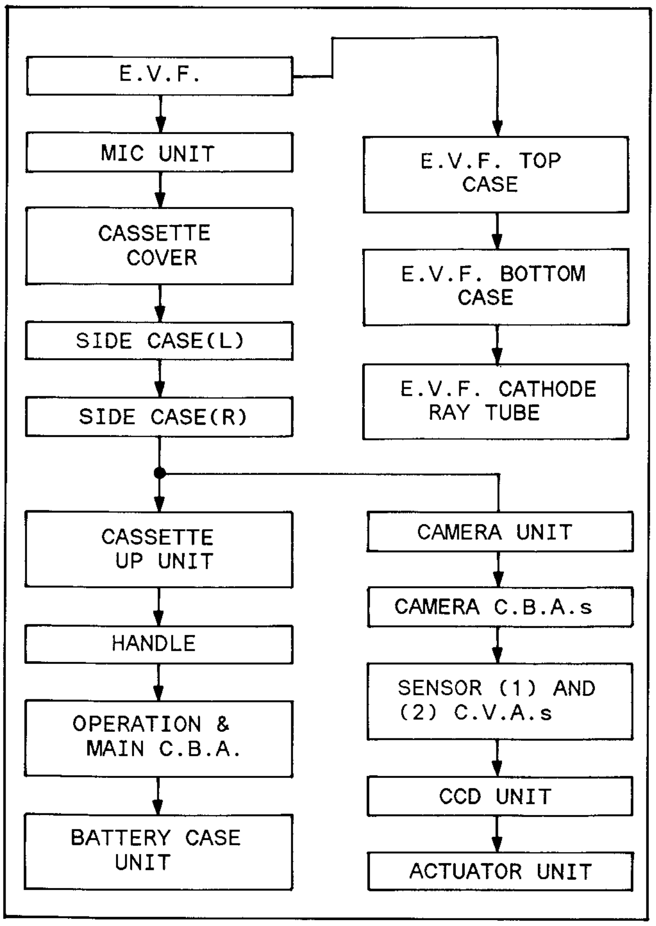

E.V.F.
MIC UNIT
CASSETTE COVER
SIDE CASE(L)
SIDE CASE(R)
CASSETTE UP UNIT
HANDLE
OPERATION & MAIN C.B.A.
BATTERY CASE UNIT
E.V.F. TOP CASE
E.V.F. BOTTOM CASE
E.V.F. CATHODE RAY TUBE
CAMERA UNIT
CAMERA C.B.A.s
SENSOR (1) AND (2) C.V.A.s
CCD UNIT
ACTUATOR UNIT

Fig.D1

Note:
- (1) When removing the cabinet, work with care so as not to break the locking tabs.
- (2) Place a cloth or some other soft material under the P.C. Boards or Unit to prevent damage.
- (3) When re-installing, ensure that the connectors are connected and electrical components have not been damaged.
- (4) Do not supply power to the Unit during disassembly.

### 2-1-2. DETAILED DISASSEMBLY METHOD

1. Removal of E.V.F. Unit

(1) Remove the E.V.F. Unit connector.
(2) Slide the E.V.F. Unit in the direction shown by the arrow.
(3) Remove the E.V.F. Unit while pushing on the Locking Lever on the Bottom of the Unit.

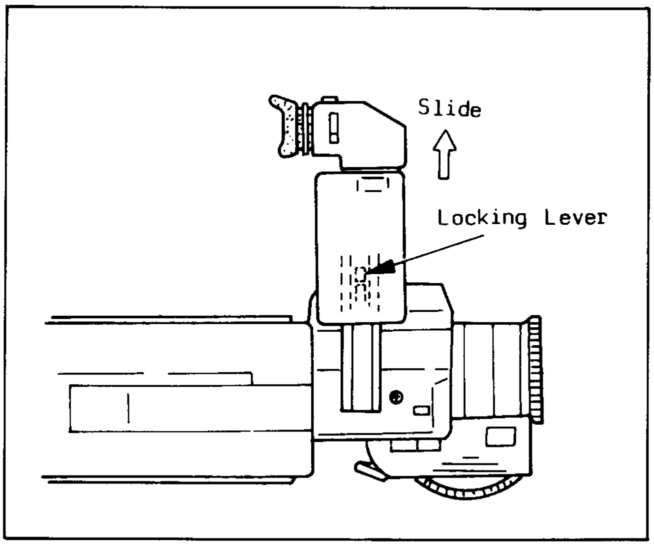

Slide
Locking Lever

Fig.D2

2. Removal of MIC Unit

(1) Remove 2 Screws (A).
(2) Slide the MIC Unit in the direction shown by the arrow.
(3) Disconnect the connector on the MIC Unit.

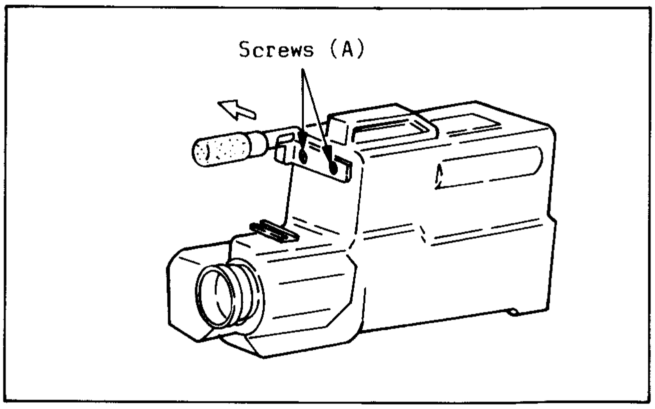


Fig.D3

3. Removal of Cassette Cover

(1) Remove 2 Screws (B).
(2) Pull the Cassette Cover straight up to remove.

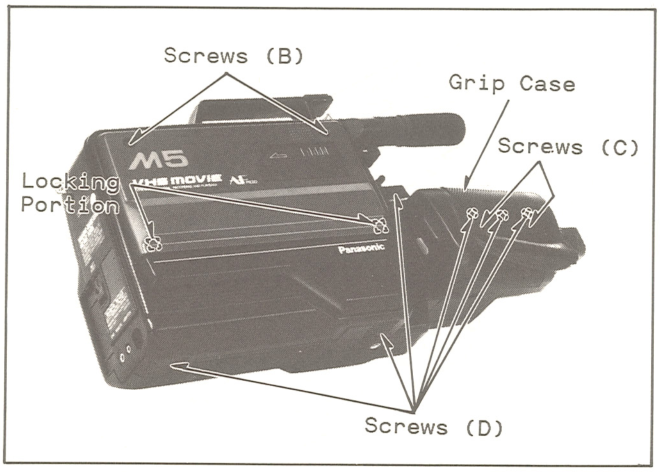

Screws (B)
Grip Case
Screws (C)
Locking Portion
Screws (D)

Fig.D4

Note:
Care should be taken not to damage the Alignment Tabs, when removing or re-aligning the Cassette Cover.

4. Removal of Side Case (R) Unit

(1) Remove 6 Screws (E) in Fig.D5.
(2) Lift the Side Case (R) Unit slightly. Then disconnect the connectors on the Side Case (R) Unit.

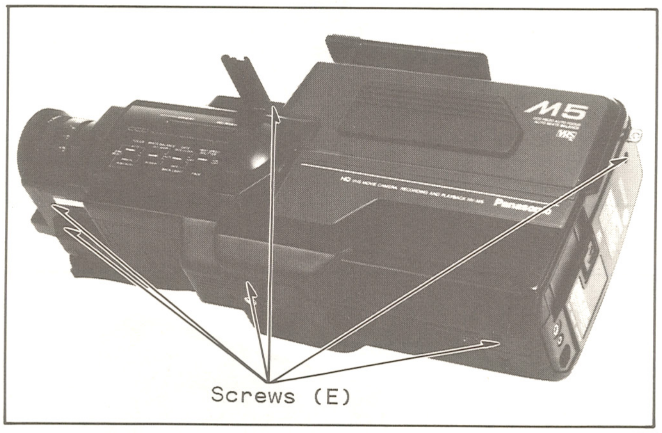


Fig.D5

5. Removal of Side Case (L) Unit

(1) Remove 2 Screws (C) shown in Fig.D4 and remove a grip case.
(2) Remove 6 Screws (D) shown in Fig.D4.
(3) Lift the Side Case (L) Unit slightly. Then disconnect the connectors on the Side Case (L) Unit.

6. Removal of Handle

(1) Slightly loosen Screw (I) shown in Fig.D6.
(2) Slide the Handle slowly toward the front of the camera, until the stopper of the handle is released (approx. 1cm movement). Then lift the handle up.

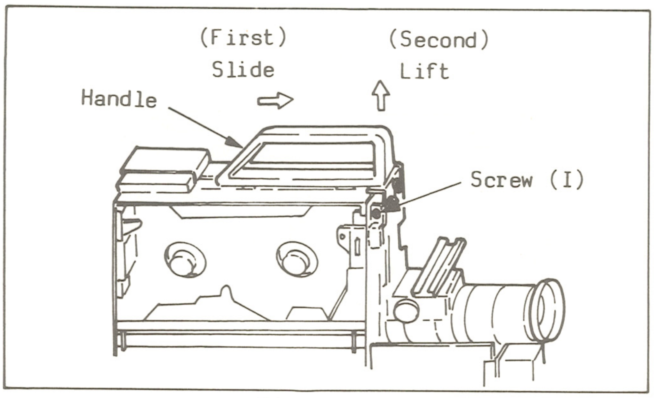

(First)
Slide
(Second)
Lift
Handle
Screw (I)

Fig.D6

7. Removal of Cassette UP Unit

(1) Remove 6 Screws (I).
(2) Remove the Cassette UP Unit, unlocking 2 Locking Tabs.
(3) If necessary, remove 2 Screws (J) to remove Supply and Takeup Photo Transistors.

Note:
When reinstalling the Cassette Up Unit, install it in the closed (cassette down) condition.

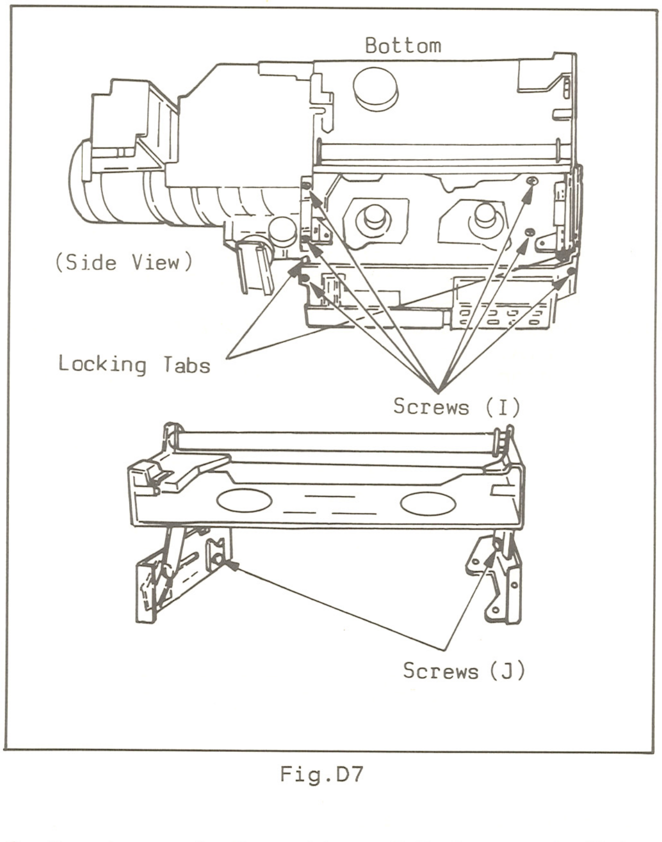
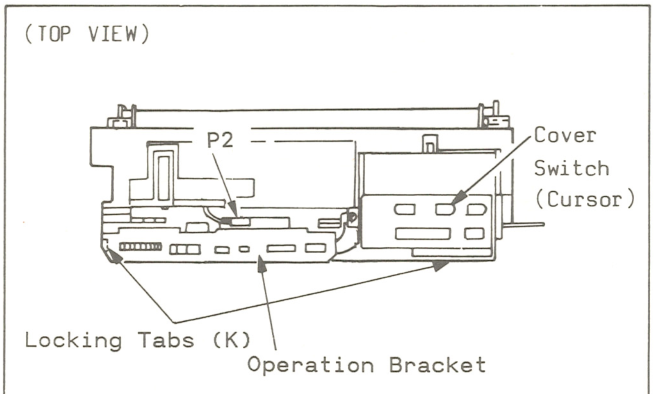

Bottom
(Side View)
Locking Tabs
Screws (I)
Screws (J)

Fig.D7

8. Opening of Operation C.B.A. and Main C.B.A.

(1) Remove Operation Bracket, and unsnap 2 locking Tabs (K).
(2) Remove 2 Screws (L).
(3) Disconnect connector P2.
(4) Open Operation/Main C.B.A., and unsnap 2 Locking Tabs (M).


(TOP VIEW)
P2
Cover
Switch
(Cursor)
Locking Tabs (K)
Operation Bracket

After removal of Operation Bracket (A) (B)

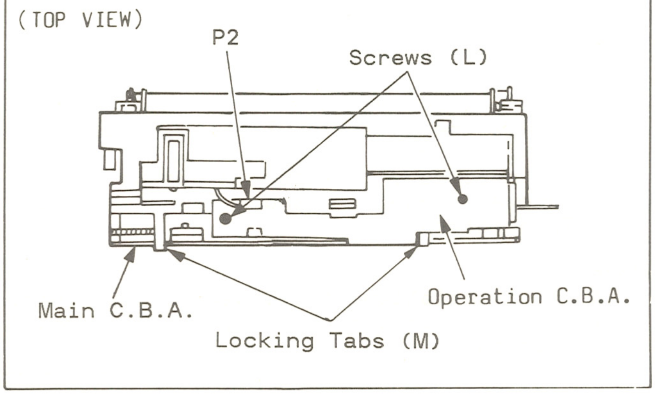

(TOP VIEW)
P2
Screws (L)
Main C.B.A.
Operation C.B.A.
Locking Tabs (M)

Fig.D8

9. Opening of Battery Case Unit.

(1) Open Main/Operation C.B.A. as shown in Fig.D9.
(2) Remove 3 Screws (N). Then lift the Battery Compartment slightly in order to release it from the Locating Pins.
(3) Remove 2 Screws (O).
(4) Remove a connector P4002 on the Audio C.B.A.
(5) Loosen wires located around the Battery Case.

By partially opening the Main/Operation C.B.A, parts around Main Pulley and Cam Gear can be accessed. And also parts around Cylinder Motor and Capstan Motor can be accessed by opening Battery Compartment.
For the mechanical movements to function under the above condition, reinstall only the Audio C.B.A. and connect P4002. Be careful that the disassembled parts do not touch each other when the power switch ON.

10. Removal of Camera Unit

(1) Remove 2 Screws (P).
(2) Disconnect Connectors P1002 and P3002 on Main C.B.A.

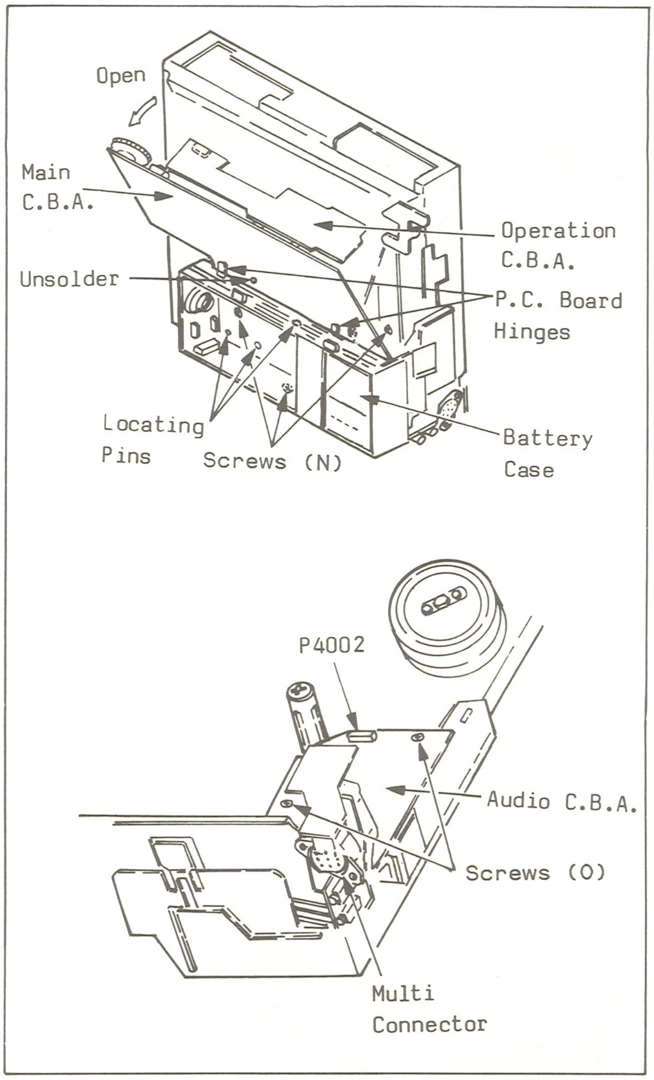

Open
Main
C.B.A.
Operation
C.B.A.
Unsolder
P.C. Board
Hinges
Locating
Pins
Screws (N)
Battery
Case
P4002
Audio C.B.A.
Screws (O)
Multi
Connector

Fig.D9

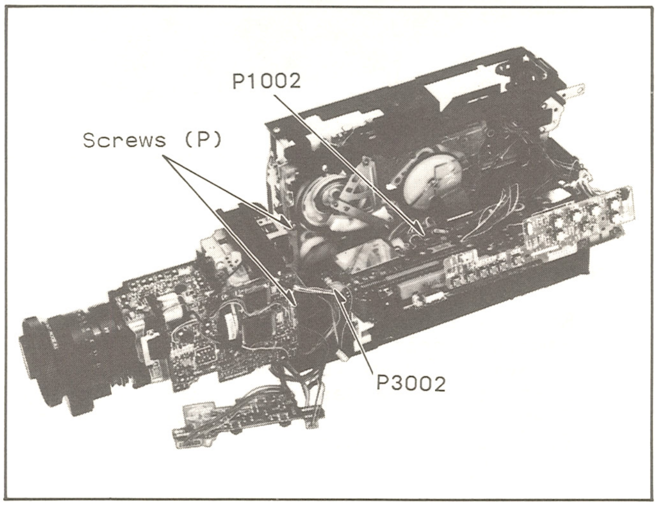

P1002
Screws (P)
P3002

Fig.D10

## 11. Removal of E.V.F. support angle

(1) Remove 2 Screws (Q).
(2) Remove E.V.F. support angle.

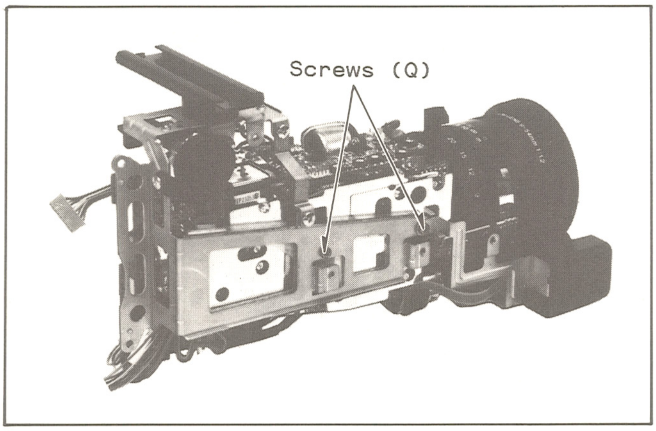


Fig.D11

## 12. Removal of Camera C.B.A.s

(1) Remove 2 screws (R) on Auto Focus C.B.A. to open it.
(2) Remove 3 screws (S) on Process C.B.A and Screw (T). Then remove Process C.B.A. with Process Sub C.B.A., AWT C.B.A. and AWT sensor angle.

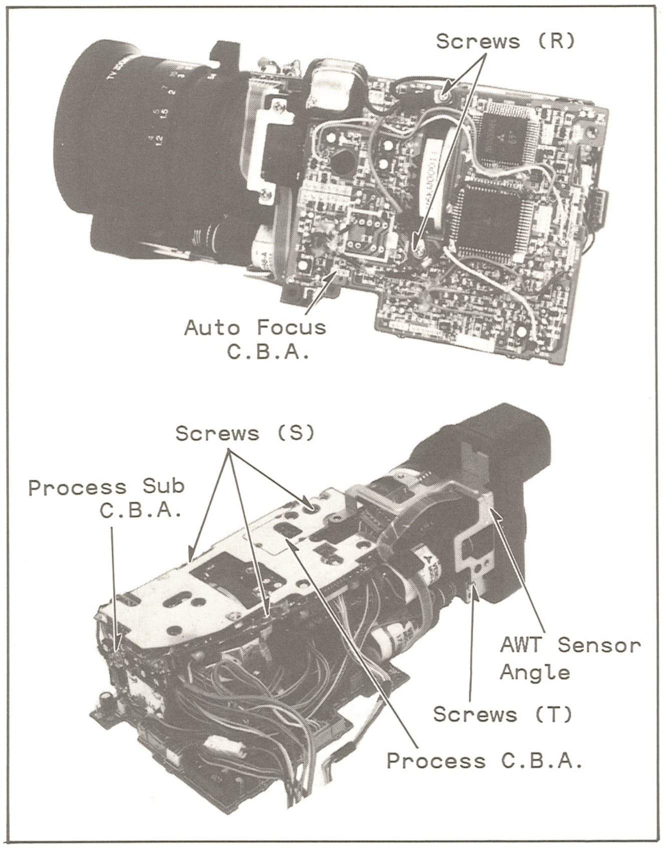

Screws (R)
Auto Focus C.B.A.
Screws (S)
Process Sub C.B.A.
AWT Sensor Angle
Screws (T)
Process C.B.A.

Fig.D12

## 13. Removal of Sensor (1) and Sensor (2) C.B.A.s

(1) Remove 2 Screws (U) and remove shield case.

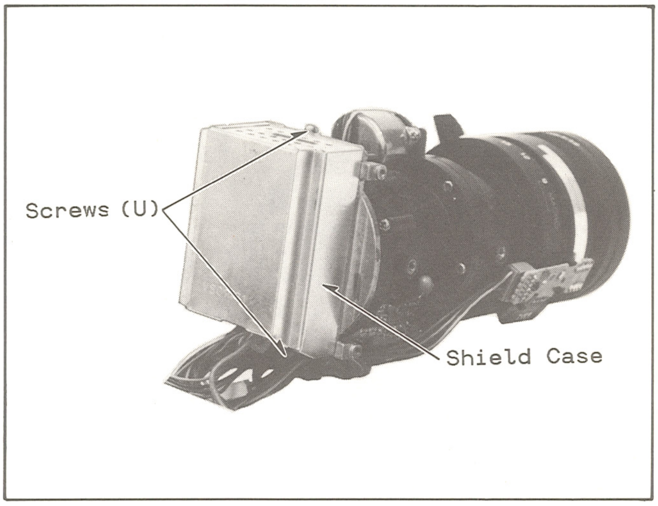

Screws (U)
Shield Case

Fig.D13-1

(2) Remove Sensor (2) C.B.A. disconnecting B201 and B202.
(3) Remove 2 Screws (V) to remove Sensor (1) C.B.A.

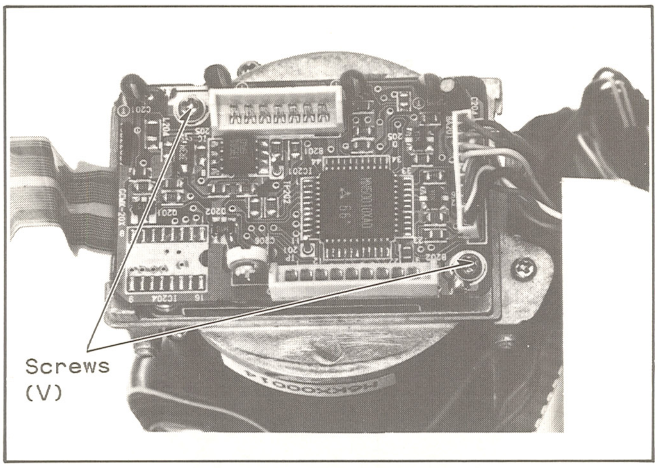


Fig.D13-2

## 14. Removal of CCD unit

(1) Disconnect the connector FP251.
(2) Remove 2 Screws (Y) and remove a CCD heat sink.
(3) Remove 2 Screws (Z) and remove a CCD unit.

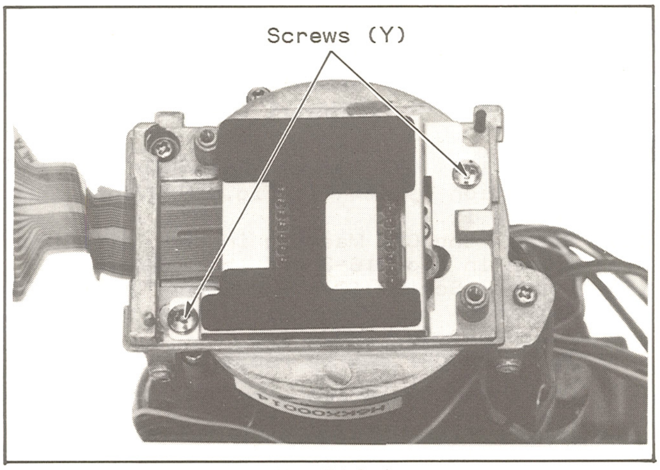


Fig.D14-1

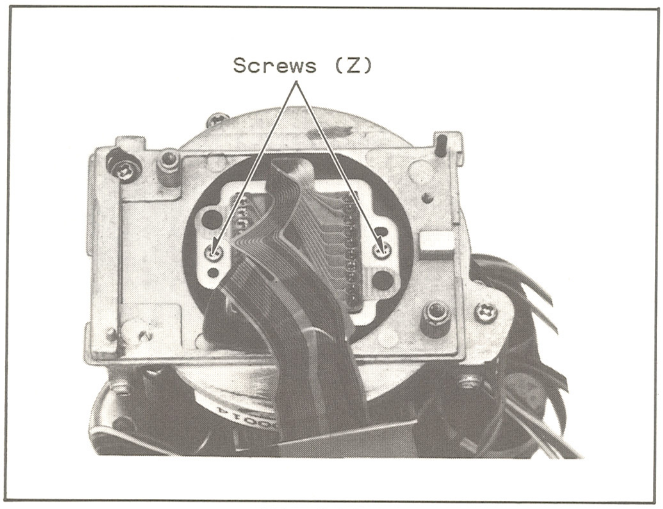


Fig.D14-2

15. Removal of Actuator Unit.

(1) Remove 3 Screws (A) and remove the Actuator Unit.

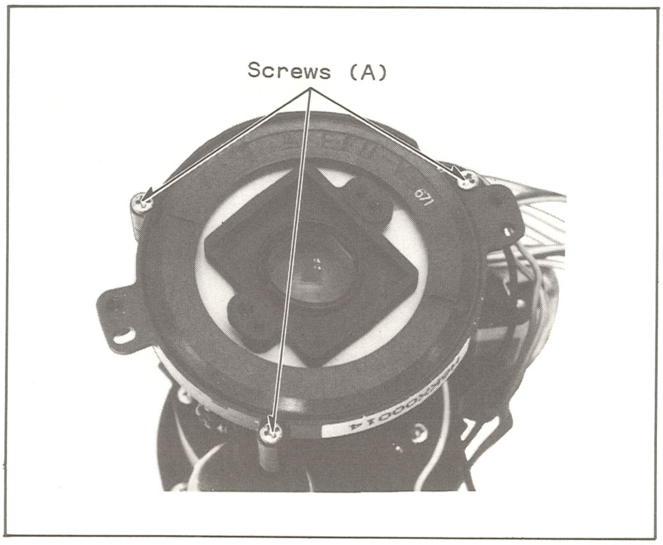


Fig.D15

16. Disassembly of E.V.F. Unit

(1) Remove 3 Screws (B) on the bottom of the E.V.F. Unit and then remove the Bottom Case.
(2) Remove CRT Case B from CRT Case A as shown in Fig.D16-1.
(3) Lift the CRT Assembly up as shown in Fig.D16-2 to remove it from the CRT Case A.
(4) Pull the CRT Socket Assembly in the direction shown in Fig.D16-3 and then remove it.
(5) Slide the CRT Masking in the direction shown in Fig.D16-3 and then remove it.
(6) Loosen Screw (C) and then pull DY Assembly in the direction shown in Fig.D16-3 to remove it.
Then the CRT can be replaced.
(7) For reinstallation, reverse the above steps.

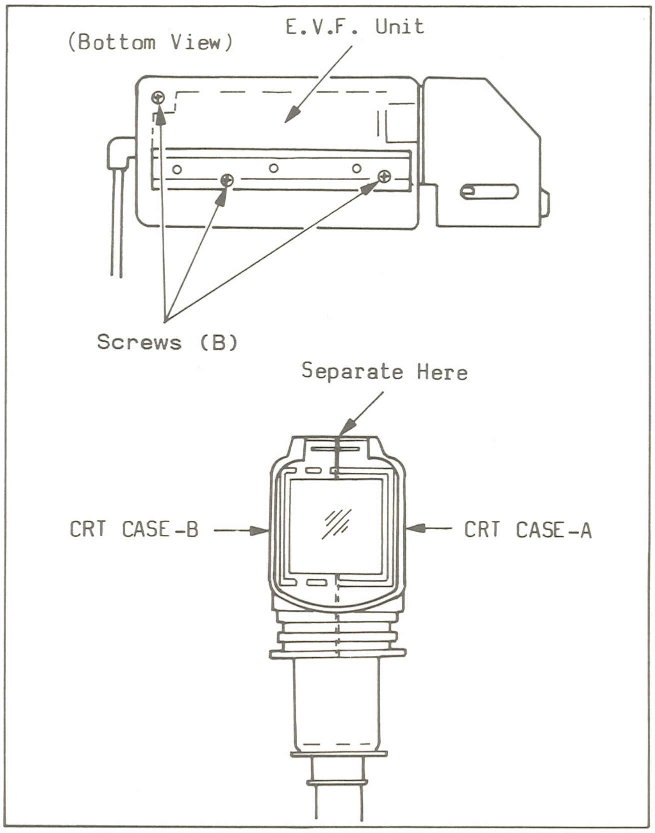

(Bottom View)
E.V.F. Unit
Screws (B)
Separate Here
CRT CASE-B
CRT CASE-A

Fig.D16-1

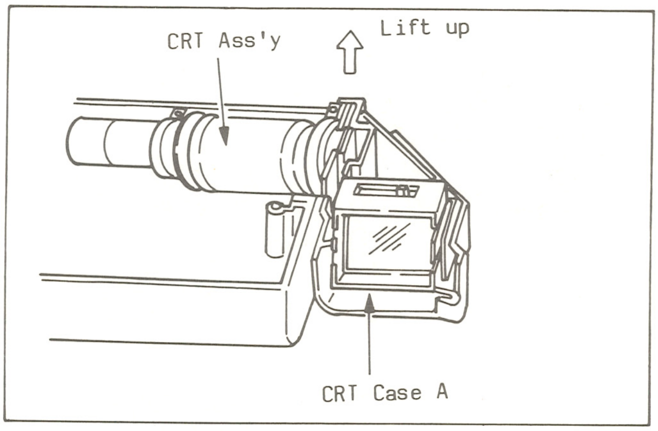

CRT Ass'y
Lift up
CRT Case A

Fig.D16-2

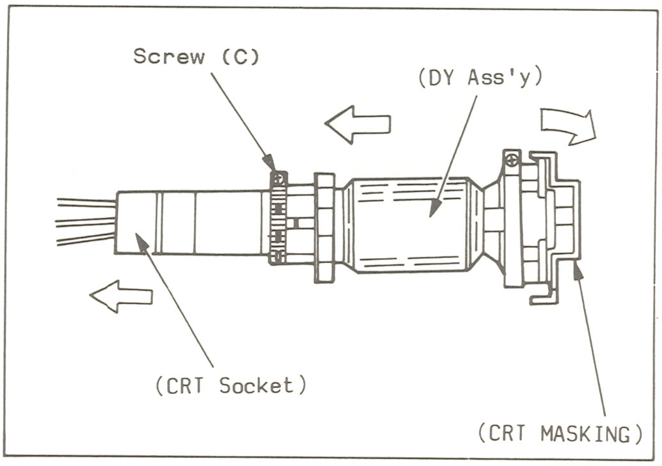

Screw (C)
(DY Ass'y)
(CRT Socket)
(CRT MASKING)

Fig.D16-3

Note:

When reinstalling the DY Assembly, proceed as shown below.

(1) Reinstall the CRT Masking by sliding it onto the face of the CRT.
(2) Adjust the position of the DY Assembly so that the "V" shaped portions of the coil meet the Projections of the CRT Masking.
This will align when the CRT Masking is installed on the CRT Case A properly.

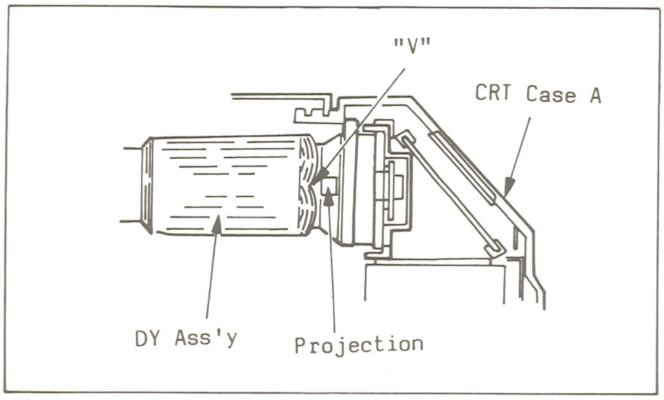


Fig.D16-4

After re-installation, confirmation of the display is necessary.

## 2-2. REPLACEMENT PROCEDURES

### 1. Replacement of CCD Unit

(1) After removing of the CCD unit, install the new CCD unit.
(2) Assemble the unit subject to the reverse steps of disassembly procedures.

Note:

(1) Do not touch the sureface of CCD unit.
(2) Confirm the whole adjustment procedures for Camera section after replacing this CCD unit.

### 2. Replacement of Zoom Motor Unit

(1) Remove 2 Screws (D) and remove Zoom Motor unit.
(2) Install the new Zoom Motor unit.
Prior to this replacement,no dust around the Zoom Motor, especially around the gear unit should be confirmed.

### 3. Replacement of Focus Motor Unit

(1) Remove 2 Screws (E) and remove Focus Motor unit.
(2) Install the new Focus Motor unit.
Prior to this replacement,no dust around the Focus Motor unit, especially around the gear should be confirmed.
(3) After this replacement, all the correct adjustments for all parts of auto-focus should be comfirmed.

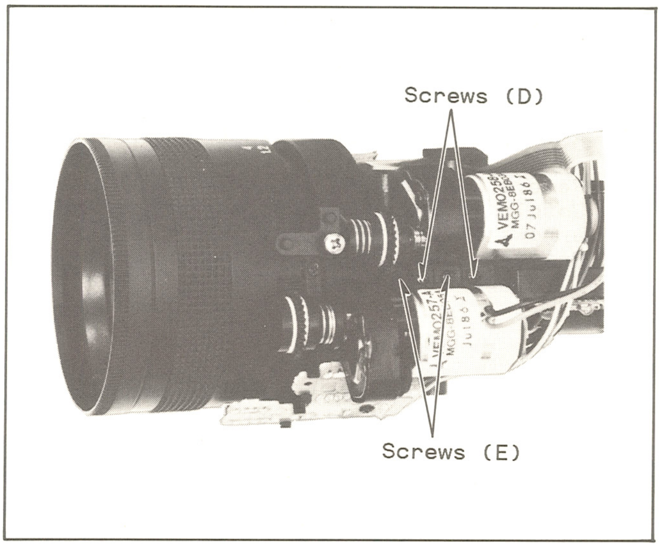


Fig.R1

### 4. Replacement of DD Cylinder Unit

Work with extreme care when removing or replacing the DD cylinder unit.
Do not touch video heads during servicing.

(1) Remove the screw (S) to take the Earth Holder Unit out.

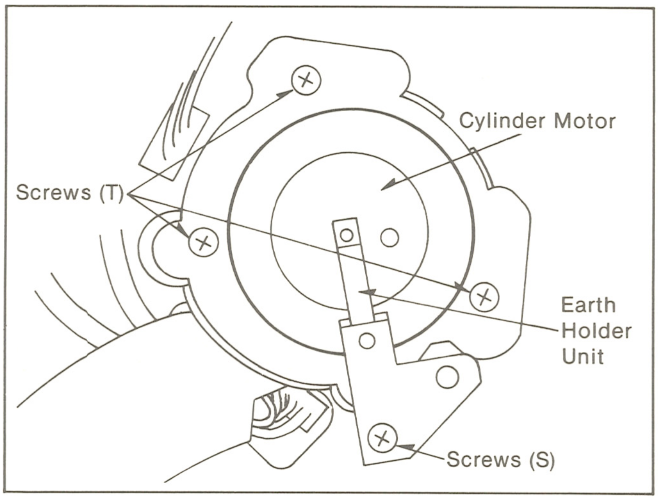


Fig.R2

(2) Disconnect 3 connectors (P2001, P2002 and P5001).
(3) Remove the 3 screws (T) to take DD cylinder unit out.

Note:

Since there is very little clearance between DD cylinder unit and chassis, handle with care.

(4) Reinstall the new cylinder unit, tighten the 3 screws (U). Then re-connect 3 connectors.

## 5. Replacement of Upper Cylinder Unit

Be sure to observe the following procedures when replacing Upper Cylinder unit.

(1) REMOVING THE UPPER CYLINDER UNIT

a. Remove 2 screws as shown in Fig.R3.
b. Unsold 8 soldered portions indicated by arrows on Circuit Board.
c. Remove the Upper Cylinder Unit by lifting it upwards.

Note:
Soldered portion can be easily removed by using solder sucking wire, etc.

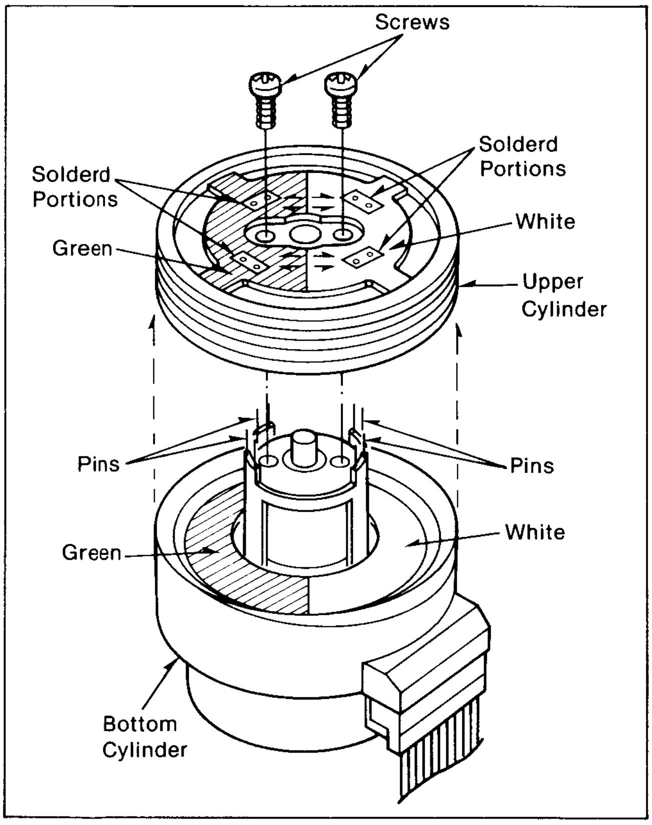

Screws
Solderd Portions
Solderd Portions
White
Green
Upper Cylinder
Pins
Pins
White
Green
Bottom Cylinder

Fig.R3

(2) REINSTALLING THE UPPER CYLINDER UNIT

The upper Cylinder Unit can be reinstalled by reversing the removal procedure.
However, when reinstalling, it must be extremely careful so that both the white and green portions of C.Board on the Upper Cylinder Unit will correctly match the white and green portions of the circuit Board on Bottom cylinder as shown in Fig.R4.

Note:
If the Upper Cylinder unit is reversely installed, no colour will appear when playing back a pre-recorded tape.

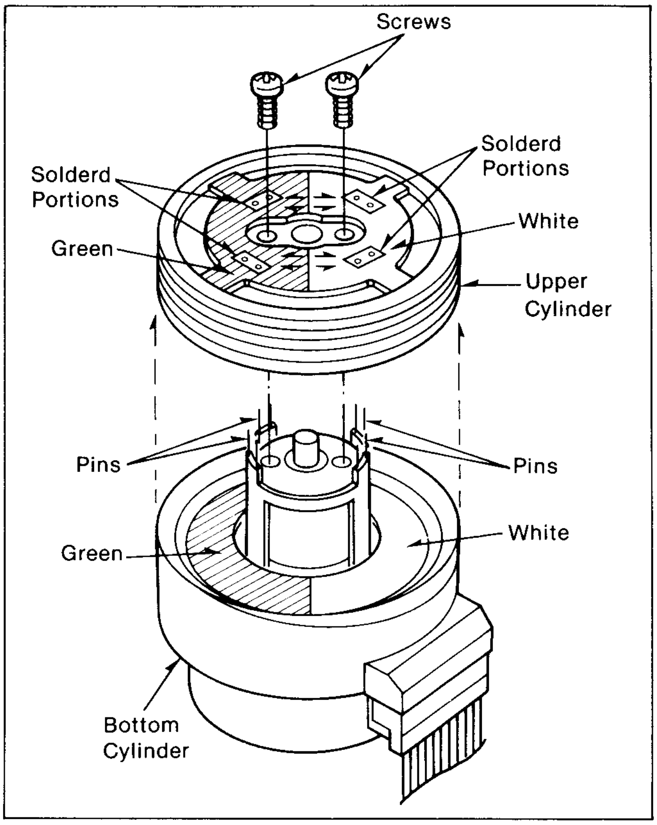

Screws
Solderd Portions
Solderd Portions
White
Green
Upper Cylinder
Pins
Pins
White
Green
Bottom Cylinder

Fig.R4

## 6. Replacement of Capstan Stator Unit

* Equipment Required:
Reel Table Height Gauge (VFK0190)
* Specification:...........0.5+-0.05mm

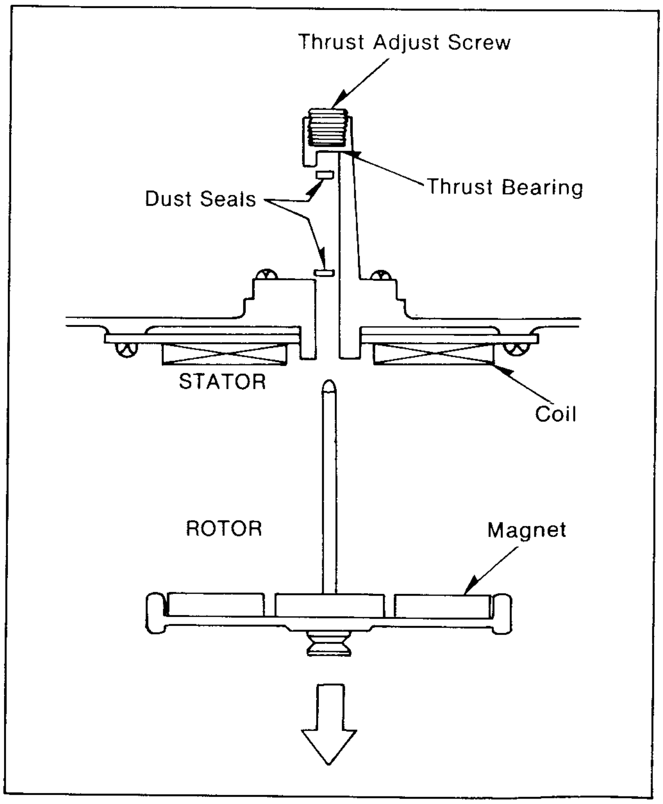

Thrust Adjust Screw
Thrust Bearing
Dust Seals
STATOR
Coil
ROTOR
Magnet

Fig.R5

(1) Remove the 2 screws and take belt cover out. After that remove the capstan belt.
(2) Tighten the Thrust Adjust Screw fully and pull the capstan rotor.

Note:
In this time pay attention not to lose two pieces of Dust Seal.

(3) Replace the new rotor with two pieces of Dust Seal.

Note:
(1) Pay attention to the replaced new rotor not to shock because of magnet absorbtion. So hold the rotor firmly and replace it carefully.
(2) In this replacement, do not touch the Capstan shaft by any hard material like drivers or tweezers.

(4) After replacement, wipe off the Capstan shaft to remove oil, grease or dust.
(5) Unscrew Thrust Adjust Screw till the rotor is just touching to the stator.
(6) Turn this mechanism upside down and place the Reel Table Height Gauge so that the gauge fits to the chassis correctly, and read the height.
(7) Adjust the Thrust Adjust Screw so that the height difference just meets in the specification (0.5+-0.05mm) reading the height from the gauge.

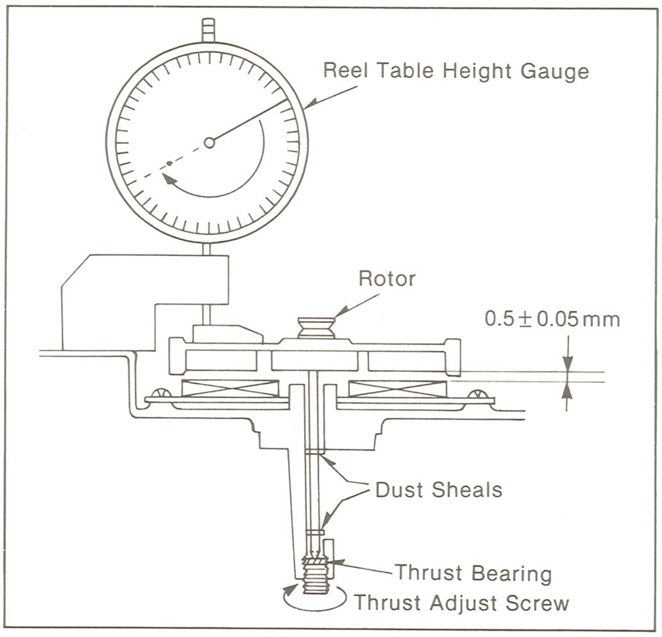

Reel Table Height Gauge
Rotor
0.5±0.05mm
Dust Sheals
Thrust Bearing
Thrust Adjust Screw

Fig.R6

Note:
If the Thrust Adjust Screw is fully opened, you have to pay attention not to lose Thrust Bearing.
When it is fixed, confirm that the direction of Thrust Bearing is correct as

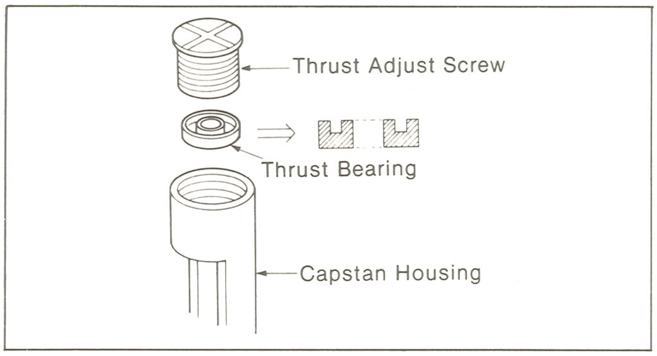

Thrust Adjust Screw
Thrust Bearing
Capstan Housing

Fig.R7

## 7. Replacement of Tension Band

(1) Remove the cassette conpartment.
(2) Remove a retaining ring and take out a Rew Arm (A) Unit.
(3) Remove a retaining ring and a snap washer and take out a tension Band Unit.

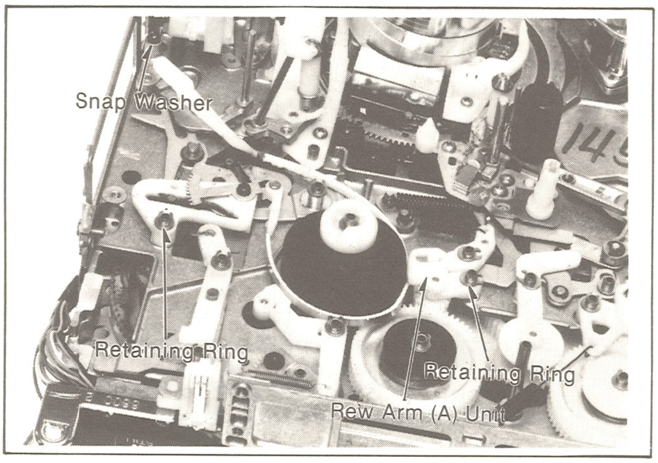

Snap Washer
Retaining Ring
Retaining Ring
Rew Arm (A) Unit

Fig.R8

(4) Remove a Tension Band from Band Release Arm and Tension Arm Unit.

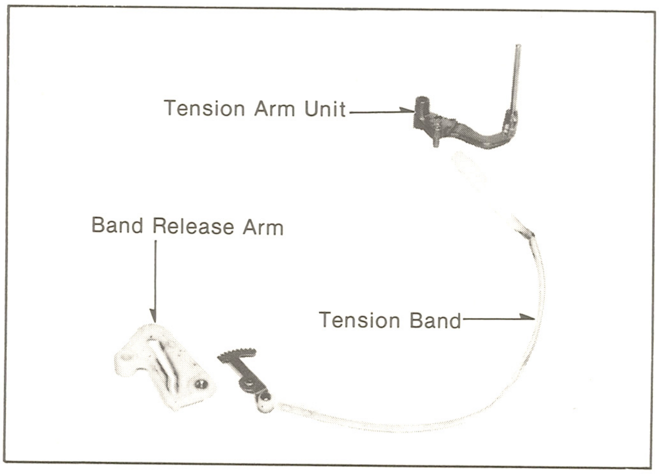

Tension Arm Unit
Band Release Arm
Tension Band

Fig.R9

(5) Replace a new Tension Band by Proceeding reverse steps shown above.

# 2-3. MECHANICAL ADJUSTMENT PROCEDURES

## 2-3-1. PROCEDURE FOR CLEANING OF UPPER CYLINDER UNIT

(1) Position the video head to clean and hold the upper cylinder to keep it from turning while cleaning.
(2) Gently rub the video head in direction of tape travel with Head Cleaning Stick.
(3) Repeat for the other three video heads.

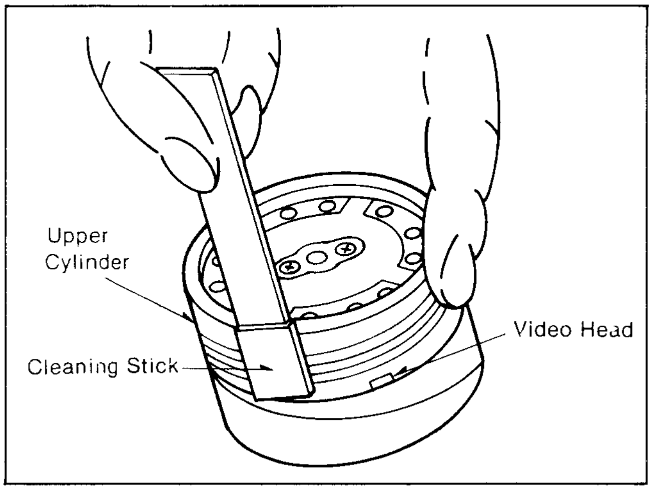


Fig.M1

Note:
(1) Do not rub vertically.
(2) Do not apply any pressure to heads. If contamination is not easily removed, continued gentle wiping will usually remove the substance.

## 2-3-2. MECHANICAL ADJUSTMENT PROCEDURES

This model uses the same mechancal chassis as used for previous in-camera type VHS Movies, NV-M1, NV-M3. If the above mentioned information is required, refer to the service manuals for these models.

# 2-4. ELECTRICAL ADJUSTMENT PROCEDURES

## 2-4-1. ELECTRICAL ADJUSTMENT FOR CAMERA SECTION

TEST EQUIPMENT AND TOOLS

The following equipments are required for the adjustment of camera section of NV-M5.

(1) Oscilloscope
Dual Trace, 25MHz, 2mV/Div
10:1 Probe
1:1 Probe
(2) Digital voltmeter (D.V.M) or V.T.V.M
(3) Frequency counter
(4) Vector scope
(5) Light Meter
(6) Tripod
(7) Colour video monitor
(8) Lighting
140 footcandles (1400Lux) on the chart surface, 3200 degrees K.
(9) Reflection chart
  * Logarithmic gray scale chart (Part No.:YWV2310RB99)
  * Colour chip chart (Part No.:YWV2100RB98)
  * Ball chart (Part No.:YWV2100RB03)
  * Hunting chart (Included in this service manual)
  * White Card (Chart) (The white paper is available as a white chart)
  * J Chart (Part No.:YWV2100RB03)
  * B/W Chart (Included in this service manual)
  * Gray-White Chart (Included in this service manual)
(10) Camera Holder (VFK0382)
This is used to fix the camera unit on a tripod.

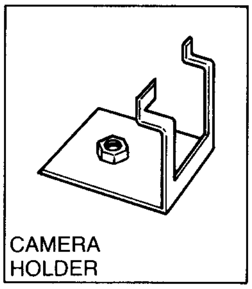


Fig.E 1

(11) 14 pin connection cable (VFK0377)
This is used for connection between the camera unit and the video recorder unit.

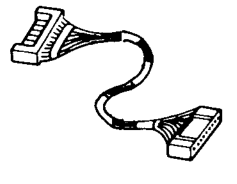


Fig.E 2

(12) Colour temperature conversion filter
C12 filter (VFK0374)
C2 filter (VFK0375)
(13) Gelatin filter (VFK0376)
(14) 1/4ND filter (VFK0320)
The 1/4 ND filter converts the incoming light into 1/4 light.
If the 2 pieces of 1/4ND filter are needed, incoming light may be dropped to 1/16 light.
This filter or another ND filter may be available in the market.
(15) Plastic tip Driver

PREPARATIONS

(1) Remove the camera unit from VTR chassis (Refer to the Disassembly section)
(2) Set the camera unit on the tripod using the camera holder.
Unscrew 2 screws (A).
Attach the camera unit to the camera holder ( VFK0382 ), and tighten the screw.
(3) Connect the video recorder unit and camera unit through the 14 pin connection cable ( VFK0377 ).

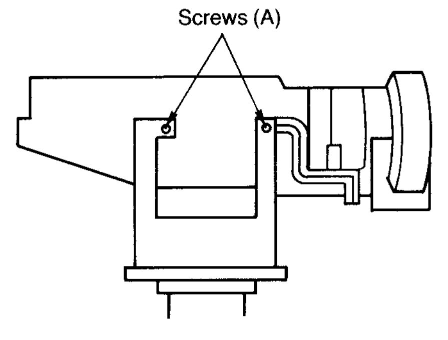


Fig.E 3

Now supply the power to the camera unit from the Video recorder unit, and the Video signal from the colour camera is fed to the Video recorder unit.

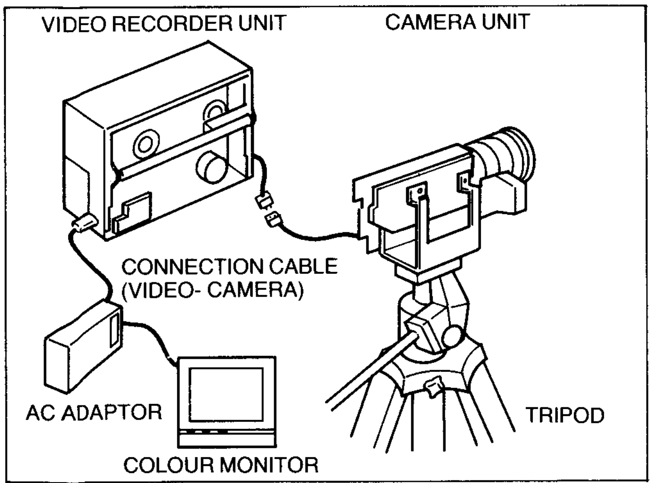

VIDEO RECORDER UNIT
CAMERA UNIT
CONNECTION CABLE (VIDEO- CAMERA)
AC ADAPTOR
TRIPOD
COLOUR MONITOR

Fig.E 4

Note:
(1) Service work for the camera unit must be performed in dust free location to keep the lens dust free.
(2) To achieve the best adjustment, warm up the camera for approximately 30 minutes before adjusting.

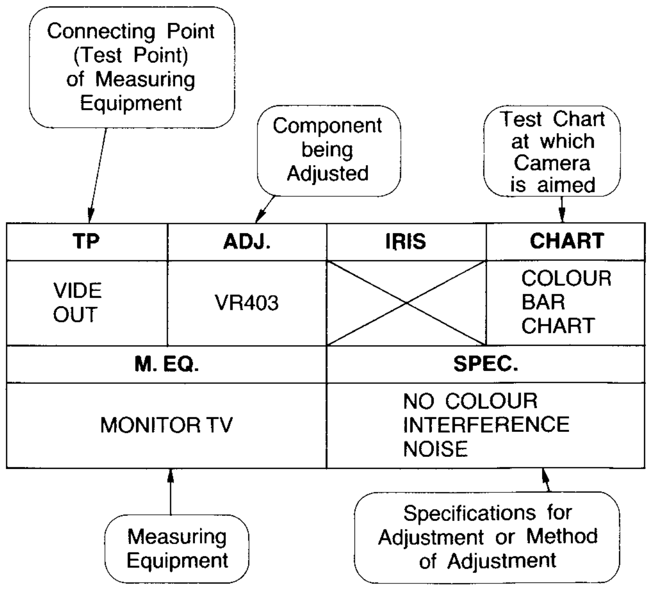
POSITION OF CONTROLS AND SWITCHES ON THE CAMERA

(1) White Balance Switch --- "IN DOOR" position
(2) Focus Switch ------------ "MANUAL" position
(3) Back Light Switch ---- "OFF" position
(4) Fade Switch ---------- "OFF" position
(5) High Speed Shutter Switch -- "OFF" position

Caution:

(1) Do not set the automatic white balance during the adjustment. If the autmatic white balance is set accidentally, turn off the power switch of the power supply once to reset the white balance condition.
(2) Aim the camera at the logarithmic gray scale chart, white chart and so on during the adjustment so that the chart fully occupies the raster of the monitor screen.

## HOW TO READ THE ADJUSTMENT PROCEDURES


Connecting Point (Test Point) of Measuring Equipment
Component being Adjusted
Test Chart at which Camera is aimed
Measuring Equipment
Specifications for Adjustment or Method of Adjustment

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| VIDE OUT | VR403 | ☒ | COLOUR BAR CHART |

| M. EQ. | SPEC. |
|---|---|
| MONITOR TV | NO COLOUR INTERFERENCE NOISE |

**Note:** If ☒appears in any block, this means it is not used or not important.

Fig.E 5

FOR TRIGGERING OF THE OSCILLOSCOPE

To trigger the scope, the following test points are supplied.
H rate : TP403 (HD Signal) or TP3002 (Video Signal)
V rate : TP402 (VD Signal) or TP3002 (Video Signal)

Camera Process Adjustment Flow chart

1. BACK FOCUS ADJUSTMENT
2. PLL FREQUENCY ADJUSTMENT
3. V-SUB VOLTAGE ADJUSTMENT
4. SENSOR OUTPUT ADJUSTMENT
5. 4.43MHz FREQUENCY ADJUSTMENT
6. PEDESTAL LEVEL ADJUSTMENT
7. ALC ADJUSTMENT
8. AGC ADJUSTMENT
9. YH MIX LEVEL ADJUSTMENT
10. Y 2H DELAY LEVEL ADJUSTMENT
11. Y 1H DELAY LEVEL ADJUSTMENT
12. CARRIER BALANCE ADJUSTMENT
13. INDOOR WHITE BALANCE ADJUSTMENT
14. AWT OUTDOOR WHITE BALANCE ADJUSTMENT
15. fH /2 BALANCE ADJUSTMENT
16. COLOUR PHASE AND GAIN ADJUSTMENT
17. AWT LOW ILLUMINATION CUT LEVEL ADJUSTMENT
18. AWT OFFSET AND GAIN ADJUSTMENT
19. AWT HIGH COLOUR TEMPERATURE CLIP ADJUSTMENT
20. HIGH ILLUMINATION COLOUR INTERFERENCE ADJUSTMENT
21. AF AMP BIAS AND GAIN ADJUSTMENT
22. AF HIGH FREQUENCY RESPONSE ADJUSTMENT
23. AF VL AND VLN ADJUSTMENT
24. AF PIEZO AMPLIFICATION ADJUSTMENT

Fig.E 6

E.V.F Adjustment Flow Chart

1. PICTURE TILT ADJUSTMENT
2. HORIZONTAL HOLD ADJUSTMENT
3. FOCUS CONTROL ADJUSTMENT
4. V-SIZE ADJUSTMENT
5. CONTRAST AND BRIGHTNESS ADJUSTMENT

Fig.E 7

## CAMERA ADJUSTMENT PROCEDURES

### 1. BACK FOCUS ADJUSTMENT

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| VIEDO OUT | BACK FOCUS PITCH | | HUNTING CHART (INCLUDED IN THIS MANUAL) |
| M. EQ. | | SPEC. | |
| MONITOR TV | | SHARPEST FOCUS IS OBTAINED | |

(1) Aim the camera at the hunting chart, in 3m distance and zoom all the way in (Fully tele position).
(2) Focus the lens on the object.
(3) Loosen the two lock screws as shown below.
(4) Zoom all the way back and adjust the back focus pitch so that the sharpest focus is obtained.
(5) Repeat this procedure as follows, Zoom in, Focus, Zoom out and adjust until the best focus is obtained over the entire Zoom range.
(6) Tighten the two lock screws on the relay lens.

Note:
(1) Do not overetighten the lock screws, because the lens assembly or the lens housing might be cracked.

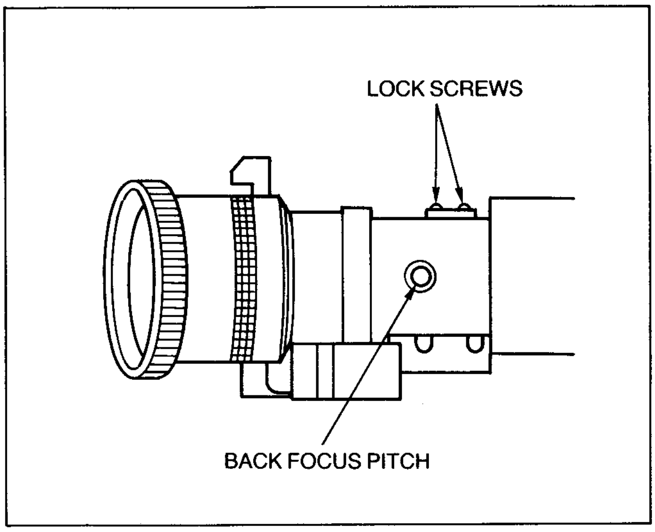


Fig.E 8

## 2. PLL FREQUENCY ADJUSTMENT

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| TP202 | C206 |  |  |
| **M. EQ.** |  | **SPEC.** |  |
| D.V.M |  | 2.0±0.2V |  |

Note:
To achieve this adjustment completely, Set the camera unit as follows.
(Refer to Technical Information in Fig.2)

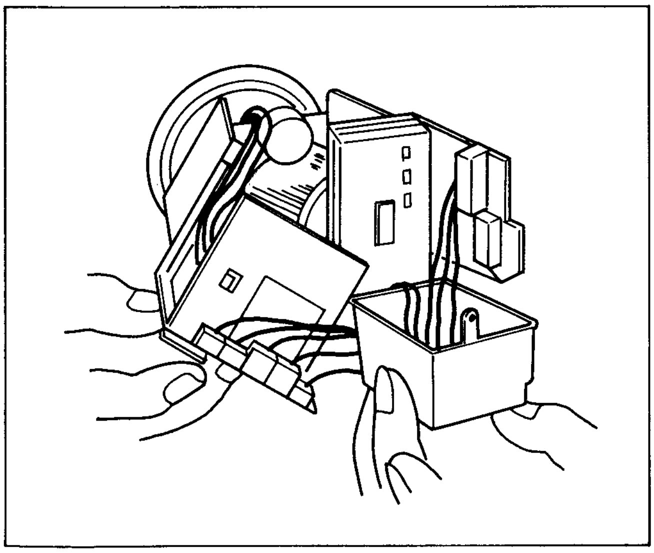


Fig.E 9

## 3. V-SUB VOLTAGE ADJUSTMENT

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| VIDEO OUT | VR251 |  | HALOGEN LAMP (3200°K) |
| **M. EQ.** |  | **SPEC.** |  |
| MONITOR |  | NO BLOOMING |  |

(1) Zoom all the way in (Fully tele position) and aim the camera at the halogen lamp (3200 degrees kelvin) with the diffused plate as shown below.

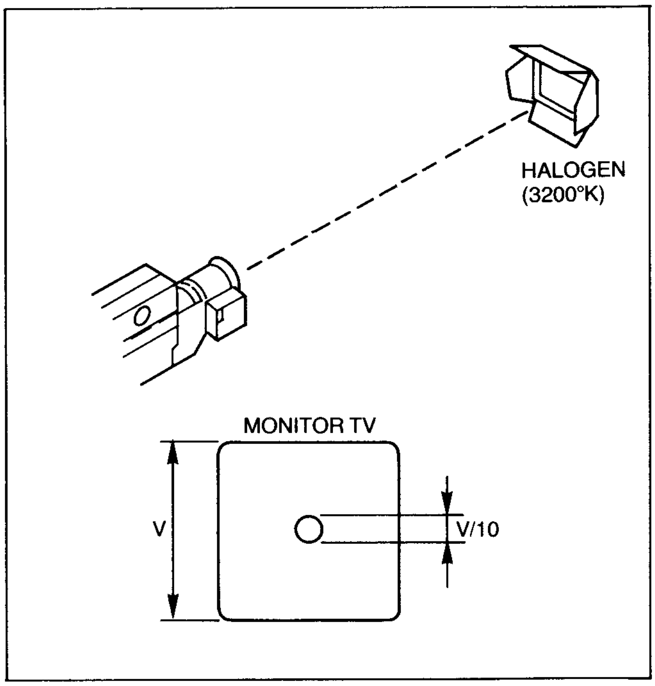


Fig.E10

(2) Set the high Speed Shutter SW to "ON" position.
(3) Connect a jumper wire between TP610 and GND to fully open the iris.
(4) Adjust the blooming control (VR251) so that the monitored picture does not contain the blooming.
(5) Confirm that the monitored picture does not contain the blooming even if the camera moves as follows.

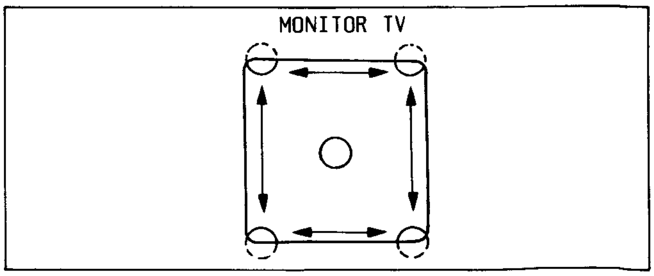


Fig.E11

### 4. SENSOR OUTPUT ADJUSTMENT

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| TP251 | VR252 |  | J CHART |

| M. EQ. | SPEC. |
|---|---|
| OSILLO SCOPE | 150±10mVp-p |

(1) Aim the camera at the J chart and focus the lens on the object.
(2) Connect the OSCILLOSCOPE to TP251 (H. rate).
(3) Adjust VR252 so that the signal level is 150+-10mVp-p as shown below.

Note:
Prior to the above adjustment, adjust the iris control (VR704) so that the level at the connector BA251-(2) is 50+-10mV by observing waveform on the OSCILLOSCOPE.

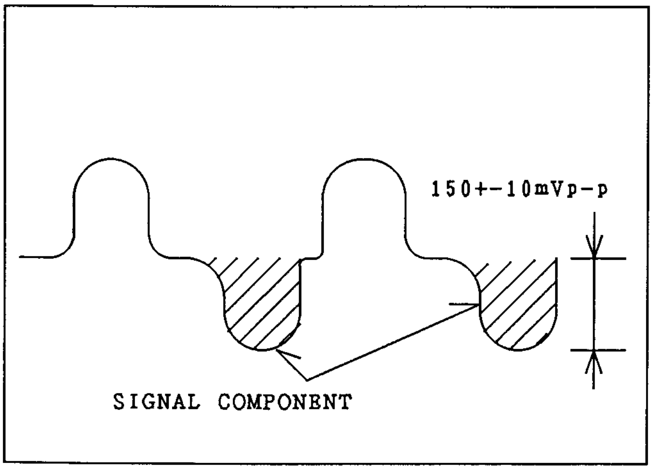


Fig.E12

### 5. 4.43MHz FREQUENCY ADJUSTMENT

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| TP613 | C320 |  |  |

| M. EQ. | SPEC. |
|---|---|
| FREQUENCY COUNTER | 4.433619MHz±20Hz |

(1) Connect the FREQUENCY COUNTER to TP613.
(2) Adjust C320 so that the reading of the FREQUENCY COUNTER is 4.433619MHz+-20Hz.

### 6. PEDESTAL LEVEL ADJUSTMENT

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| TP411 | VR402 |  |  |

| M. EQ. | SPEC. |
|---|---|
| CSCILLOSCOPE | 0mV±5mV |

(1) Set the lens cap (VQF0643) in front of lens to obtain the dark signal.
(2) Connect the OSCILLOSCOPE to TP411. (H.rate).
(3) Adjust VR402 so that the signal level is 0mV+-5mV from BLK level as shown below.

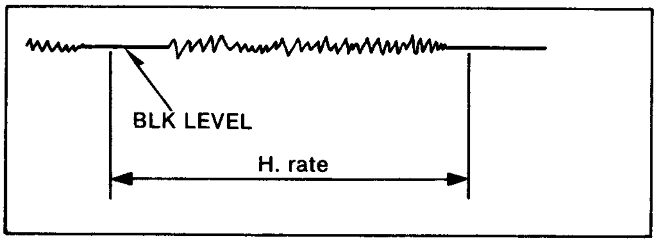


Fig.E13

### 7. ALC ADJUSTMENT

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| TP401 | VR704 |  | GRAY SCALE |

| M. EQ. | SPEC. |
|---|---|
| OSCILLOSCOPE | 350±20mVp-p |

(1) Aim the camera at the logarithmic gray scale chart and focus the lens on the object.
(2) Connect the OSCILLOSCOPE to TP401 (H.rate) .
(3) Adjust VR704 so that the signal level is 350+-20mVp-p.

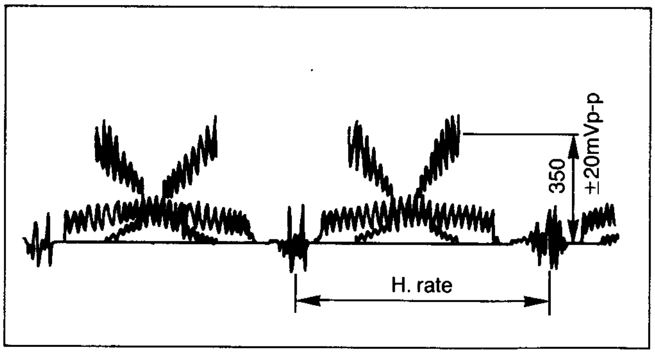


Fig.E14

### 8. AGC ADJUSTMENT

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| TP410 | VR401 |  | GRAY SCALE |

| M. EQ. | SPEC. |
|---|---|
| OSCILLOSCOPE | 400±20mVp-p |

(1) Aim the camera at the logarithmic gray scale chart and focus the lens on the object.
(2) Connect the OSCILLOSCOPE to TP410 (H.rate) through the Trap circuit.
(3) Adjust VR401 so that the signal level is 400+-20mVp-p.

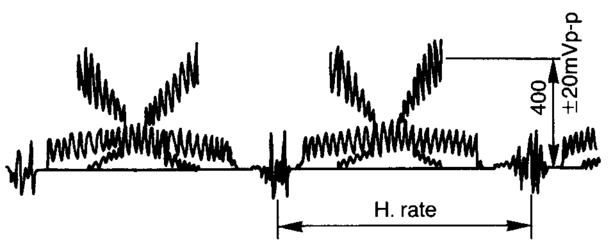


Fig.E15

Note:
(1) This adjustment would be always completed after the ALC adjustment (Item 7).

### 9. YH MIX LEVEL ADJUSTMENT

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| VIDEO OUT | VR403 | | COLOUR CHIP CHART |
| **M. EQ.** | | **SPEC.** | |
| OSCILLOSCOPE | | NO COLOUR INTERFERENCE NOISE | |

(1) Aim the camera at the colour chip chart and focus the lens on the object.
(2) Adjust VR403 so that the monitored picture does not contain the colour interference noise as shown below.

Especially the colour interference noises are appeared on the blue picture.

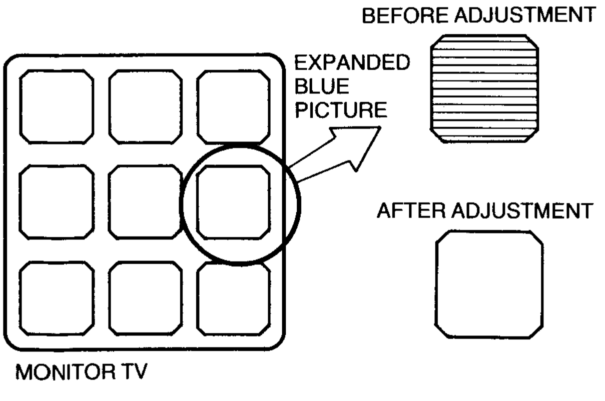


Fig.E16

Note:
The colour TV monitor without a comb filter is available for this purpose.

### 10. Y 2H DELAY LEVEL ADJUSTMENT

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| TP409 | VR409 | | GRAY SCALE |
| **M. EQ.** | | **SPEC.** | |
| OSCILLOSCOPE | | WAVEFORM IS MINIMIZED | |

(1) Aim the camera at the logarithmic gray scale chart and focus the lens on the object.
(2) Connect the OSCILLOSCOPE to TP409 (H.rate).
(3) Adjust VR409 so that the waveform is minimized.

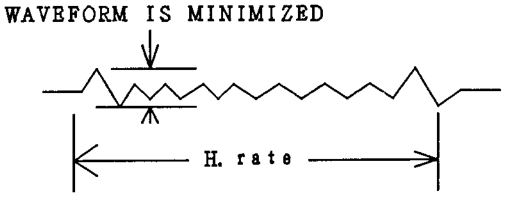


Fig.E17

Note:
(1) This adjustment would be always completed after the YH mix level adjustment (Item 9).

### 11. Y 1H DELAY LEVEL ADJUSTMENT

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| TP302 | VR408 | | GRAY SCALE |
| **M. EQ.** | | **SPEC.** | |
| OSCILLOSCOPE | | 1.8±0.05Vp-p | |

(1) Aim the camera at the logarithmic gray scale chart and focus the lens on the object.
(2) Connect the OSCILLOSCOPE to TP302 (H.rate).
(3) Adjust VR408 so that the signal level is 1.8+-0.05Vp-p.

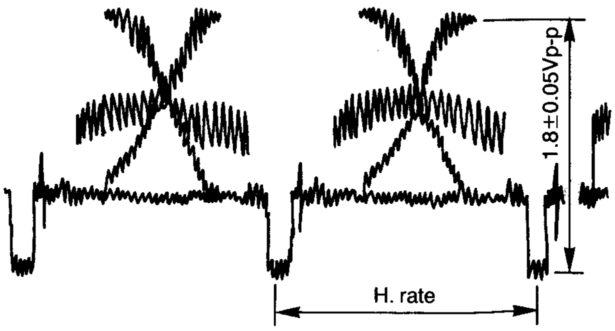


Fig.E18

Note:

(1) This adjustment would be completed after the YH mix level adjustment (Item 9) and Y 2H delay level adjustment (Item 10).

## 12. CARRIER BALANCE ADJUSTMENT

### • WITH VECTOR SCOPE

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| VIDEO OUT | VR301 (B)<br>VR302 (R)<br>VR410 | | |
| M. EQ. | | SPEC. | |
| VECTOR SCOPE | | VECTORS CENTER AND CONCENTRATED | |

(1) Set the lens cap (VQF0643) in front of the lens to obtain the dark signal.
(2) Connect the VECTOR SCOPE to the video output.
(3) Adjust VR410 so that the vectors are concentrated on center as shown below.
(4) Adjust the carrier balance control (VR301, VR302) so that the vectors comes center as shown below.

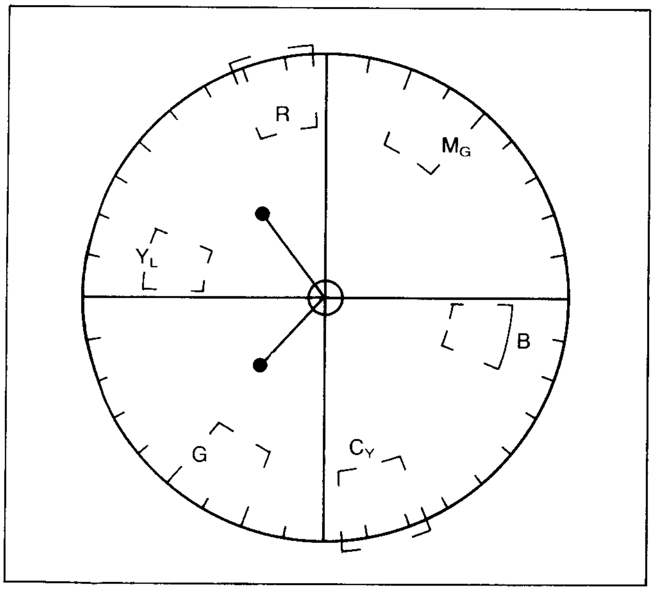


Fig.E19

Note:

(1) This adjustment would be always completed after the pedestal level adjustment (Item 6).

### • WITH OSCILLOSCOPE

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| VIDEO OUT | VR301 (B)<br>VR302 (R)<br>VR410 | | |
| M. EQ. | | SPEC. | |
| OSCILLOSCOPE | | WAVEFORM IS MINIMIZED | |

(1) Set the lens cap (VQF0643) in front of the lens to obtain the dark signal.
(2) Connect the OSCILLOSCOPE to the video output.
(3) Adjust the carrier balance control (VR301, VR302, VR410) so that the waveform is minimized as shown below.

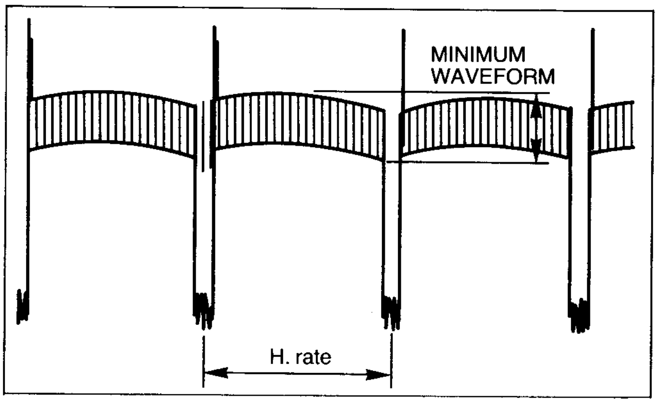


Fig.E20

Note:

(1) This adjustment would be always completed after the pedestal level adjustment (Item 6).

## 13. INDOOR WHITE BALANCE ADJUSTMENT

### • WITH VECTOR SCOPE

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| VIDEO OUT | VR405 (B)<br>VR406 (R) | | WHITE CHART |
| M. EQ. | | SPEC. | |
| VECTOR SCOPE | | VECTORS CENTER | |

(1) Aim the camera at white chart and focus the lens on the object.
(2) Connect the VECTOR SCOPE to the vide output.
(3) Adjust the white balance control (VR405, VR406) so that the vector comes to center as shown below.

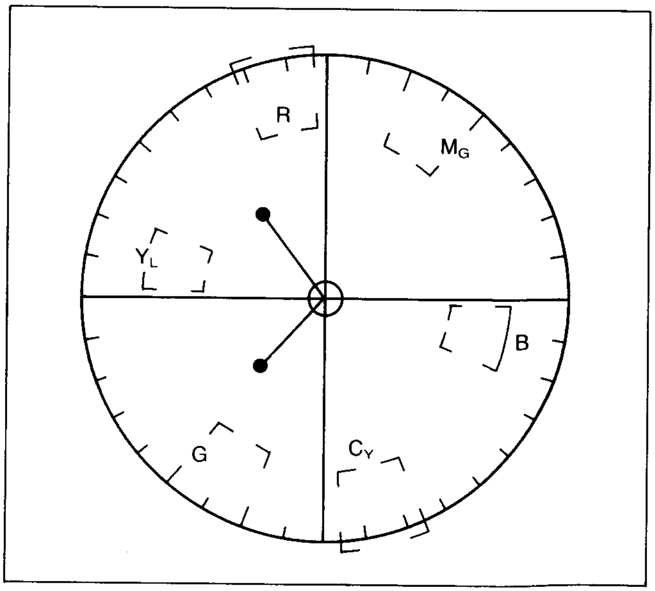


Fig.E21

Note:
(1) This adjustment would be always completed after the carrier balance adjustment (Item 12).

**• WITH OSCILLOSCOPE**

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| TP301 | VR405 (B)<br>VR406 (R) |  | WHITE<br>CHART |
| M. EQ. |  | SPEC. |  |
| OSCILLO SCOPE |  | WAVEFORM IS MINIMIZED |  |

(1) Aim the camera at the white chart and focus the lens on the object.
(2) Connect the OSCILLOSCOPE to TP301.
(3) Adjust the white balance control (VR405, VR406) so that the waveform is minimized.

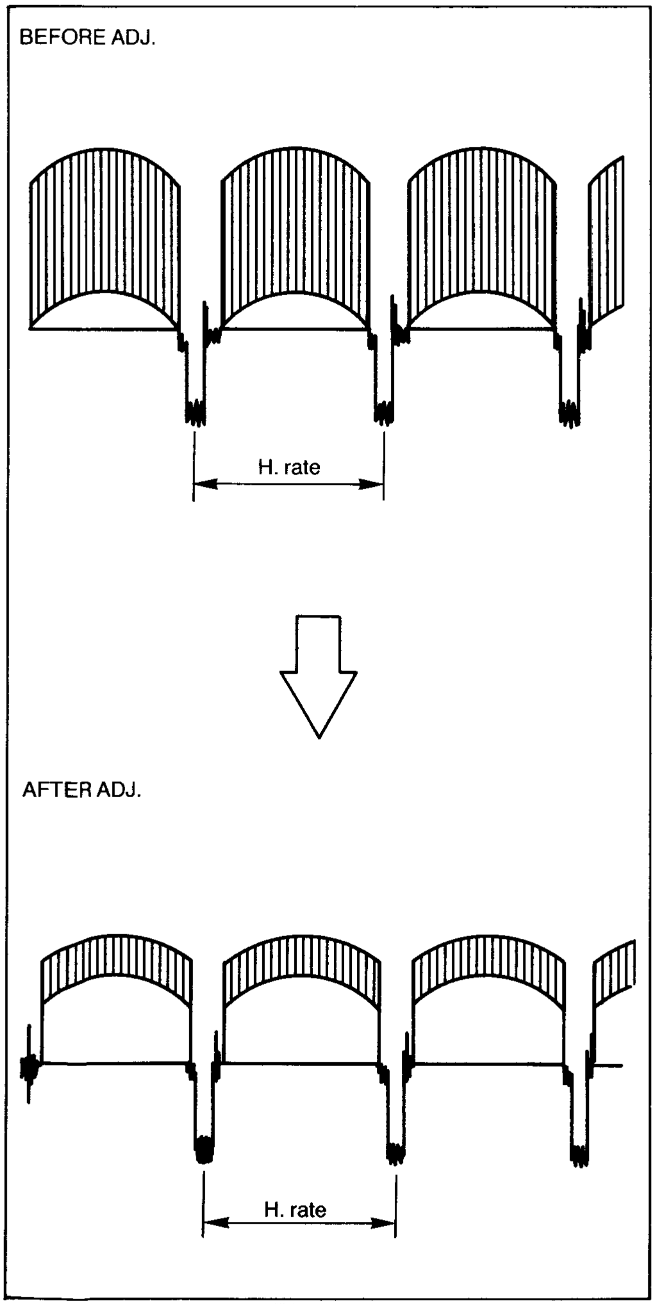


Fig.E22

Note:
(1) This adjustment would be always completed after the carrier balance adjustment (Item 12).

### 14. AWT OUTDOOR WHITE BALANCE ADJUSTMENT

**• WITH VECTOR SCOPE**

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| VIDEO<br>OUT | VR501 (B)<br>VR502 (R) |  | WHITE<br>CHART |
| M. EQ. |  | SPEC. |  |
| VECTOR SCOPE |  | VECTORS CENTER |  |

(1) Aim the camera at white chart and focus the lens on the object.
(2) Set the colour temperature conversion filter ( VFK0374 ) which converts 3200 degrees kelvin to 5200 degrees kelvin in front of the lens and surface of the AWT sensor(Refer to Note 1).
(3) If the colour temperature conversion filter is not available, use the day light. (Refer to Note 2).
(4) Adjust the white balance control (VR501, VR502) so that the vector comes to center as shown below.

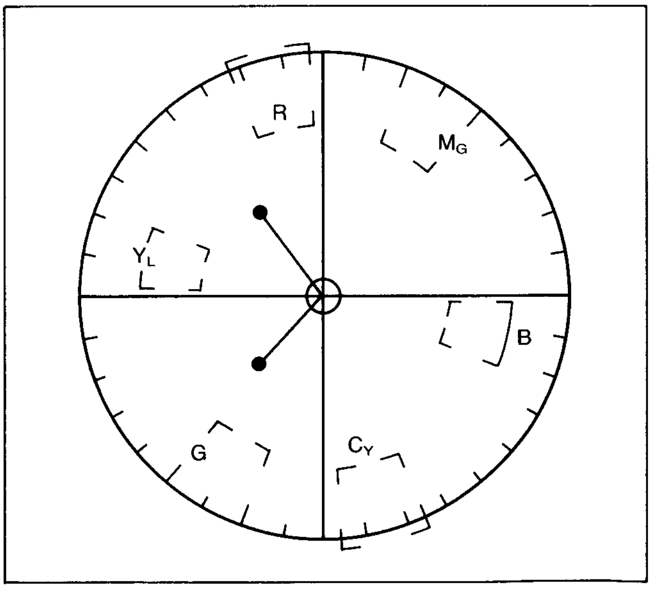


Fig.E23

**• WITH OSCILLOSCOPE**

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| TP301 | VR501 (B)<br>VR502 (R) |  | WHITE<br>CHART |
| M. EQ. |  | SPEC. |  |
| CSCILLOSCOPE |  | WAVEFORM IS MINIMIZED |  |

(1) Aim the camera at white chart and focus the lens on the object.

(2) Set the colour temperature conversion filter ( VFK0374 ) which converts 3200 degrees kelvin to 5200 degrees kelvin in front of the lens and surface of the AWT sensor(Refer to Note 1).

(3) If the colour temperature conversion filter is not available, use the day light. (Refer to Note 2).

(4) Adjust the white balance control (VR501, VR502) so that the waveform is minimized.

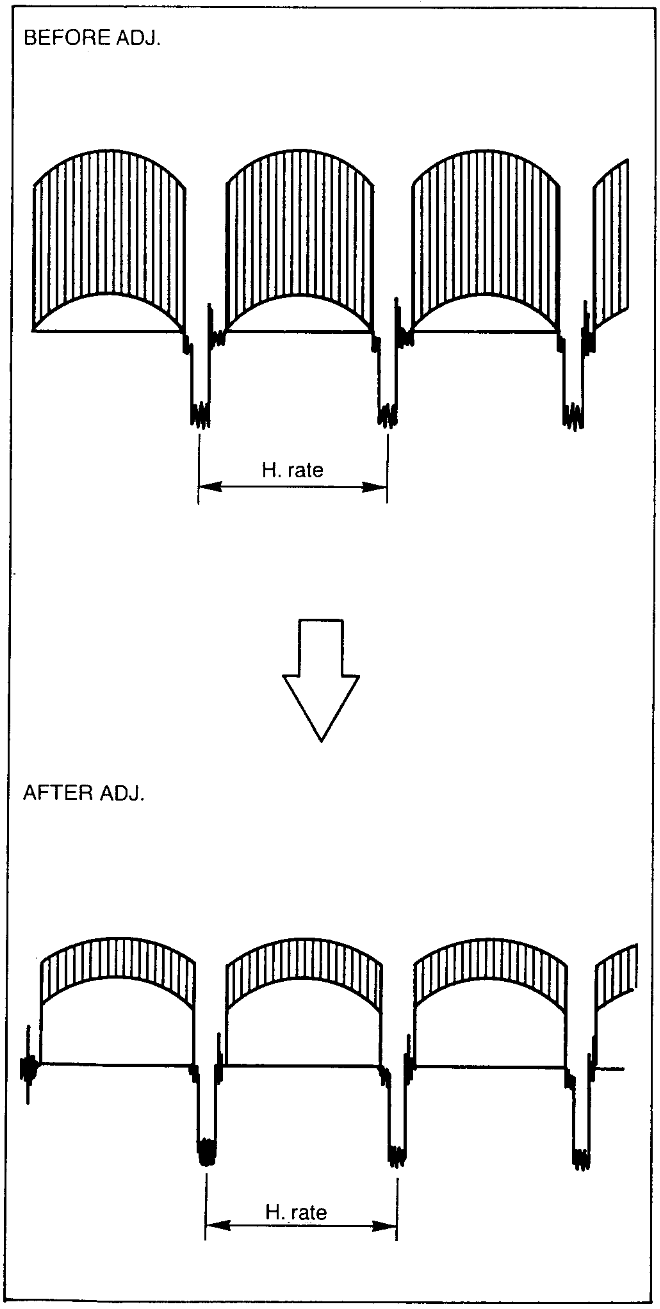


Fig.E24

Note 1:

Attach the filter fixture JIG to the lens, then set the colour temperature conversion filter ( VFK0374 ) to fixture JIG.
This filter ( VFK0374 ) can convert the colour temperature from 3200 degrees kelvin into around 5200 degrees kelvin, which is called C12 filter and it can be procured in the market.

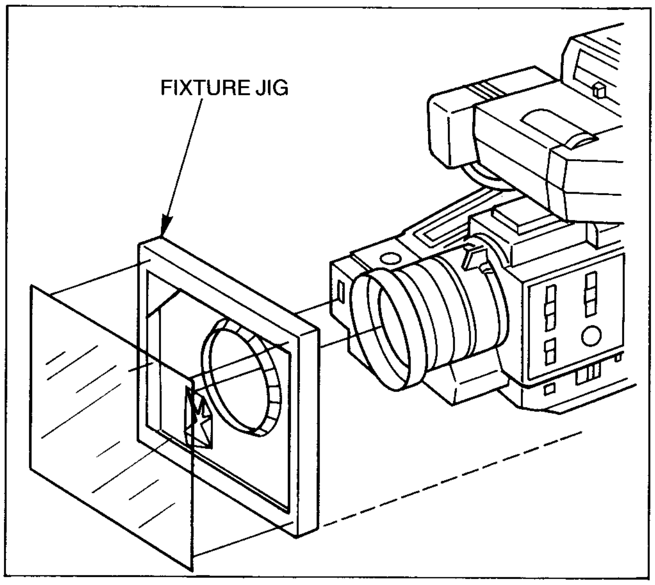


Fig.E25

If you don't want to cut the last cover page, please use another hard paper refering the neasurements.

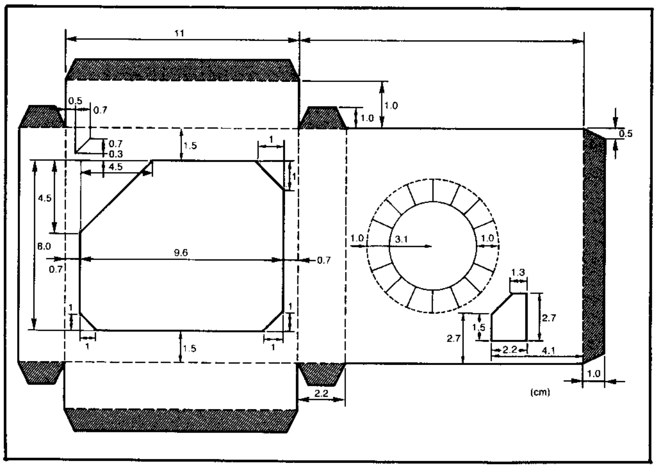


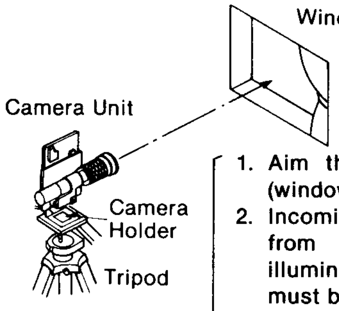
Fig.E26

Note 2:

(1) Aim the camera to outdoor (window side as possible as white object).

(2) Incomming light must be coming from only out door.

Illumination on the AWT sensor must be more than 500 Lux and adjust the white balance.



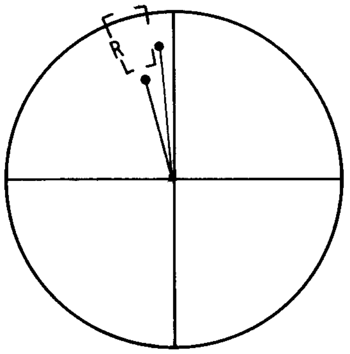
1. Aim the camera to outdoor (window side).
2. Incoming light must be come from only out door and illumination on the sensor must be more than 500Lx. and colour tempreture have to be within 5500~6500 degree kelbin.

Fig.E27

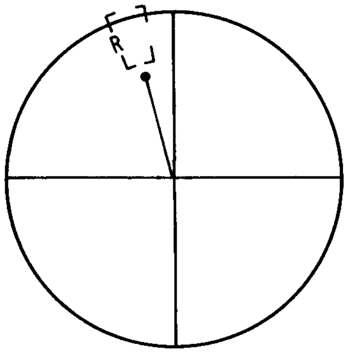
### 15. fH/2 BALANCE ADJUSTMENT

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| VIDEO OUT | VR404 |  | COLOUR CHIP CHART |
| M. EQ. |  | SPEC. |  |
| VECTOR SCOPE |  | REFER TO FIG.E-28 |  |

(1) Aim the camera at the colour chip chart and focus the lens on the object.
(2) Connect the VECTOR SCOPE to video output.
(3) Adjust VR404 so that the vector comes to RED position on the scope as shown below.



BEFORE ADJ.



AFTER ADJ.

Fig.E28

Note:
(1) This adjustment would be always completed after the carrier balance adjustment (Item 12).

### 16. COLOUR PHASE AND GAIN ADJUSTMENT

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| VIDEO OUT | VR303(PHASE)<br>VR304(B–Y)<br>VR305(R–Y) |  | COLOUR CHIP CHART |
| M. EQ. |  | SPEC. |  |
| VECTOR SCOPE |  | REFER TO FIG.E-29 |  |

(1) Aim the camera at the colour chip chart and focus the lens on the object.
(2) Connect the VECTOR SCOPE to the video output.
(3) Adjust the colour phase control (VR303) so that the vector of each colour is shown below.
(4) Adjust the colour gain control (VR304, VR305) so that the vector of each colour is within the specification comparring with the burst signal on the vector scope as shown below.

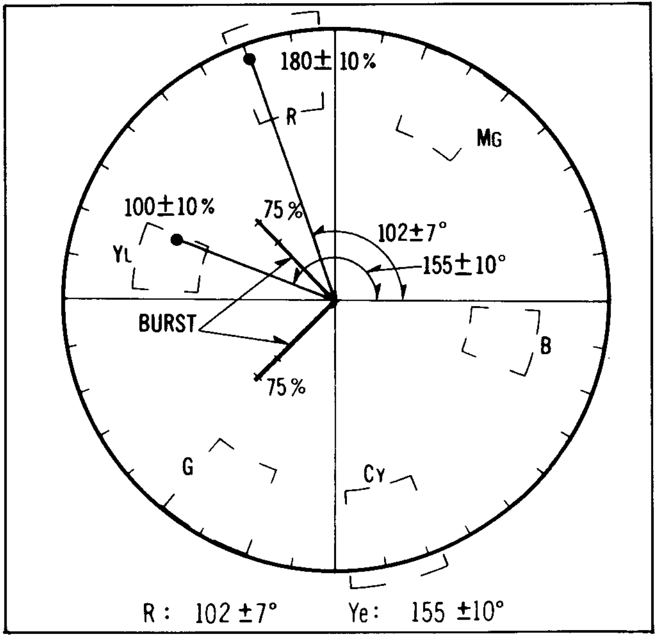


Fig.E29

### 17. AWT LOW ILLUMINATION CUT LEVEL ADJUSTMENT

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| TP501 | VR509 |  | WHITE CHART |
| M. EQ. |  | SPEC. |  |
| OSCILLOSCOPE |  |  |  |

(1) Aim the camera at the white chart and focus the lens on the object.
(2) Set the illumination on surface of the white balance sensor for 3 Lux with ND filter.
(3) Connect the OSCILLOSCOPE to TP 501.
(4) Adjust VR509 so that the signal level is just changed from low to high.
(5) Set the illumination on surface of the white balance sensor for 6 Lux with ND filter.
(6) Confirm that the waveform is just changed from high to low.

### 18. AWT OFF OFFSET/SET AND GAIN ADJUSTMENT

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| VIEDO OUT | VR507 (B)<br>VR508 (R)<br>VR505 (B)<br>VR506 (R) | | WHITE CHART |
| M. EQ. | | SPEC. | |
| VECTOR SCOPE | | CECTORS CENTER | |

**• WITH VECTOR SCOPE**

(1) Aim the camera at the white chart and focus the lens on the object.
(2) Connect the VECTOR SCOPE to the video output.
(3) Adjust the offset control (VR507, VR508) so that the vector comes to center as shown below.

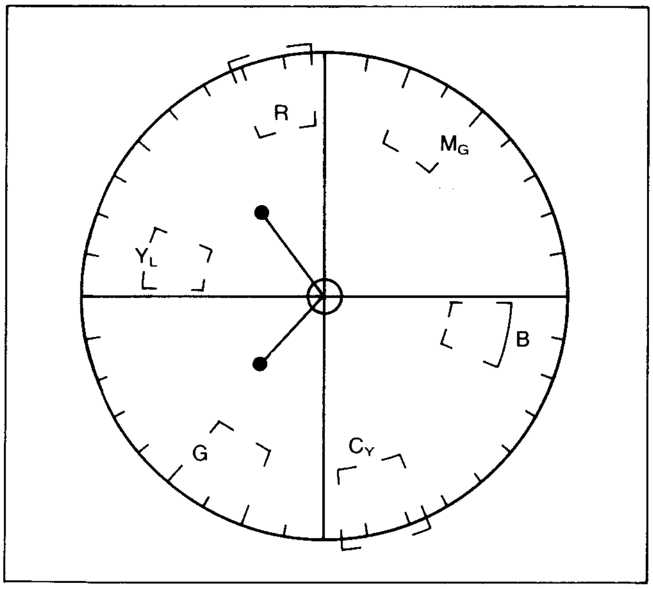


Fig.E30

(4) Next, set the colour temperature conversion filter (VFK0374 and VFK0375) which converts 3200 degrees kelvin to 5800 degrees kelvin in front of the AWT sensor.
(5) Set the two kinds of a filter in front of the lens. One filter is the colour temperature conversion filter (VFK0374 and VFK0375 ) which converts 3200 degrees kelvin to 5800 degrees kelvin, the other is the gelatin filter(VFK0376)
(6) Adjust the gain control (VR505,VR506) so that the vector comes to center as shown in Fig.E30.

**• WITH OSCILLOSCOPE**

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| VIDEO OUT (TP3002) | VR507 (B)<br>VR508 (R)<br>VR505 (B)<br>VR506 (R) | | WHITE CHART |
| M. EQ. | | SPEC. | |
| OSCILLOSCOPE | | WAVEFORM IS MINIMIZED | |

(1) Aim the camera at the white chart and focus the lens on the object.
(2) Connect the OSCILLOSCOPE to the video output.
(3) Adjust the offset control (VR507, VR508) so that the waveform is minimized as shown below.

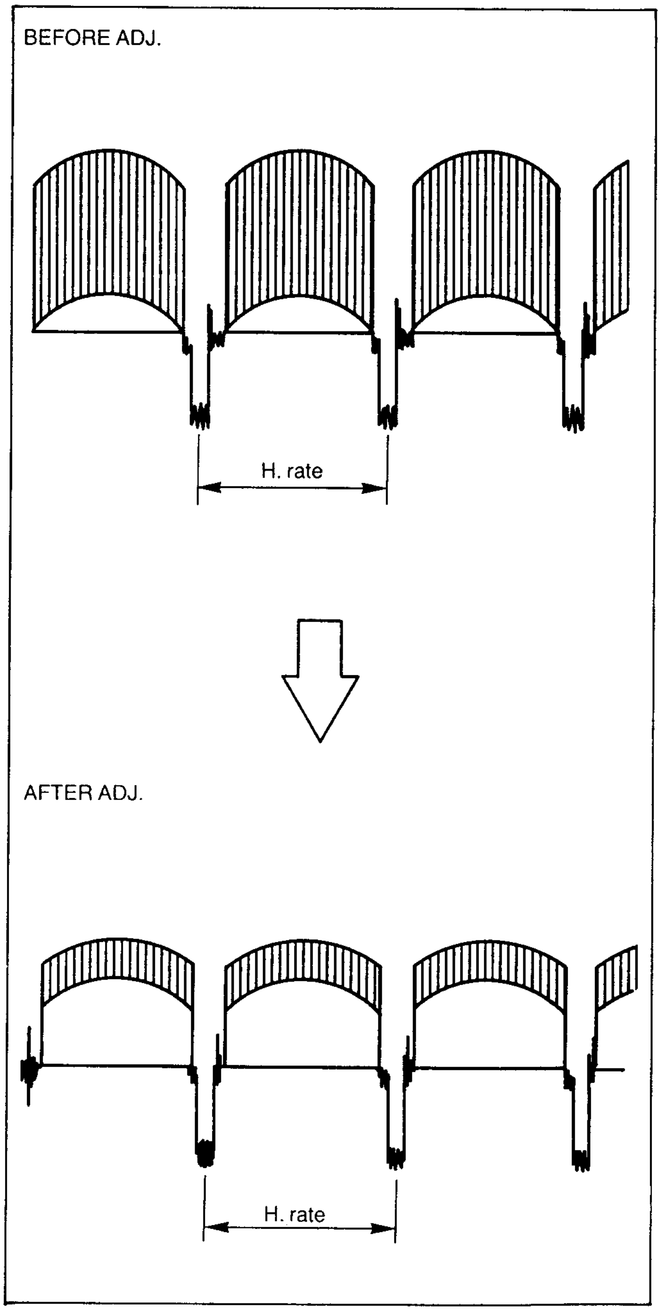


Fig.E31

(4) Next, set the colour temperature conversion filter (VFK0374 and VFK0375) which converts 3200 degrees kelvin to 5800 degrees kelvin in front of the AWT sensor (Refer to Note 1).
(5) Set the two kinds of filters in front of the lens. One filter is a colour temperature conversion filter (VFK0374 and VFK0375) which converts 3200 degrees kelvin to 5600 degrees kelvin, the other is the the gelatin filter (VFK0376).
(6) Adjust the gain control (VR505, VR506) so that the waveform is minimized (Refer to Fig.E31).

### 19. AWT HIGH COLOUR TEMPERATURE CLIP ADJUSTMENT WITH VECTOR SCOPE

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| VIDEO<br>OUT | VR503 (R)<br>VP504 (B) | | WHITE<br>CHART |
| M. EQ. | | SPEC. | |
| VECTOR SCOPE | | REFER TO FIG.E-32 | |

(1) Aim the camera at the white chart and focus the lens on the object.
(2) Set the colour temperture conversion filter (VFK0374 and VFK0375) which converts 3200 degrees kelvin into 5800 degrees kelvin in front of the lens and surface of the AWT sensor.
(3) Connect the VECTOR SCOPE to video output.
(4) Adjust the clip control (VR503, VR504) until the concentrated vector is 10% comparing with the burst signal and it dose not move so much even if those adjustment control (VR503,VR504) are turned slightly.

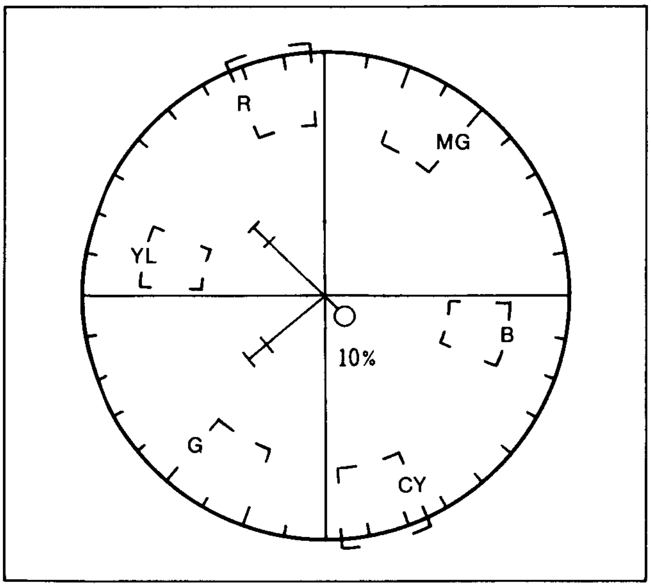


Fig.E32

Note 1:
This adjustment would be always complited after the AWT low illumination cut level adjustment (Item 17), AWT offset and gain adjustment (Item 18).

### 20. HIGH ILLUMINATION COLOUR INTERFERENCE ADJUSTMENT

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| MONITOR<br>TV | VR306 | | COLOUR<br>CHIP<br>CHART |
| M. EQ. | | SPEC. | |
| MONITOR TV | | NO COLOUR INTERFERENCE | |

(1) Aim the camera at the colour chip chart and focus the lens on the object.
(2) Press the back light button and keep as it is.
(3) Adjust VR306 so that the monitored gray scale chart do not just have colour interference.

Note 1:
This adjustment would be always completed after the process adjustment (Item 1~13, 15 and 16).

### 21. AF AMP BIAS AND GAIN ADJUSTMENT

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| TP602<br>TP609 | VR702 (BIAS)<br>VR703 (GAIN) | | WHITE<br>CHART |
| M. EQ. | | SPEC. | |
| OSCILLOSCOPE<br>D.V.M | | 2.35±0.02V (BIAS)<br>3.35±0.05V (GIAN) | |

(1) Aim the camera at the white chart and zoom all the way in (Fully tele position) and focus the lens on the object.
(2) Set the illumination on the lens for applx. 5000 Lux
(3) Connect the OSCILLOSCOPE to TP602 and read the level of waveform.
(4) Connect a jumper wire between TP610 and GND, and set the 1/16 ND filter in front of lens.
(5) Set the illumination on the lens so that the observed waveform becomes the same level of (3).
(6) Remove the 1/16 ND filter and jumper wire.
(7) Connect the D.V.M to TP609.
(8) Adjust VR702 so that the reading of D.V.M is 2.35+-0.02V.
(9) Set the lens cap in front of lens.
(10) Adjust VR703 so that the reading of D.V.M is 3.35+-0.05V at TP609.

Note 1:
This adjustment would be always completed after the ALC adjustment (Item 7).

### 22. AF HICH FREQUENCY RESPONCE ADJUSTMENT

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| TP602<br>TP605 | C623 | | GRAY-WHITE<br>CHART |
| M. EQ. | | SPEC. | |
| OSCILLOSCOPE | | 2.65±0.05V | |

(1) Aim the camera at the gray-white chart in 1.3m distance and zoom all the way in (Fully tele position).
(2) Focus the lens on the object.
(3) Adjust the illumination on the lens until the waveform at TP602 becomes 180+-10mVp-p.
(4) Connect the OSCILLOSCOPE to TP605.
(5) Adjust C623 so that the signal level is 2.65+-0.05V.

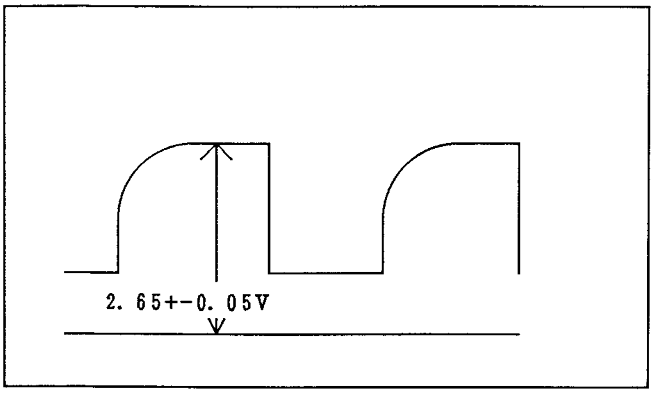


Fig.E33

### 23. AF VL AND VLN ADJUSTMENT

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| TP606<br>TP607 | VR701 |  | B/W CHART |

| M. EQ. | SPEC. |
|---|---|
| OSCILLOSCOPE | 100mV |

(1) Aim the camera at the B/W chart, in 1.2+-0.1m distance and zoom all the way in (Fully tele position) and focus the lens on the object.
(2) Disconnect the connector P603 from AF C.B.A.(VEP28013A).
(3) Set the illumination for 400+-50 Lux.
(4) Connect the OSCILLOSCOPE to TP606 and TP607 and set it to "CHOP" mode.
(5) Set the focus ring for infinity (∞)and then rotate it slowly in reverse direction until the VL waveform at TP606 is just changed from wide to narrow.
(6) Adjust VR601 so that the waveform level at TP606 is 100mV higher than the waveform level at TP607.

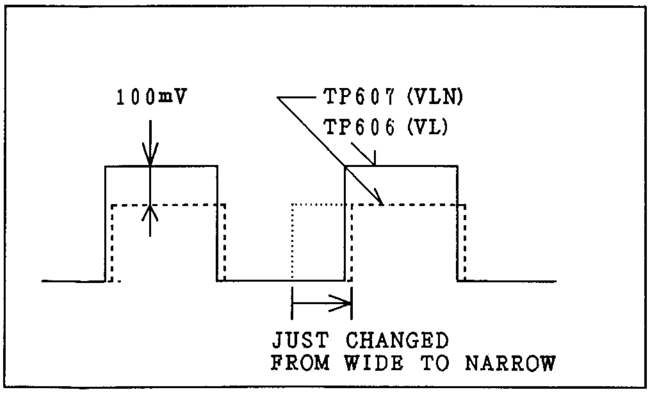


Fig.E34

### 24. AF PIEZO AMPLIFICATION ADJUSTMENT

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| TP668 | VR701 |  | J CHART |

| M. EQ. | SPEC. |
|---|---|
| OSILLO SCOPE | 11.5V±0.5V |

(1) Disconnect the connector P603 from AF C.B.A. (VEP28013A).
(2) Connect the OSCILLOSCOPE to TP608.
(3) Adjust VR701 so that the waveform level is 11.5V+-0.5Vp-p.

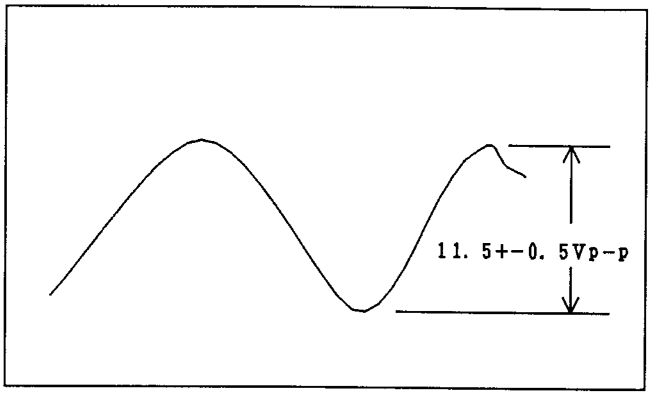


Fig.E35

## EVF ADJUSTMENT PROCEDURES

PREPARATION

The following adjustments are for the electronic view finder.

(1) Connect the view finder connector to the EVF connector on the unit.
(2) The camera circuit must be completly aligned before viewfinder adjustment is made.

### 1. PICTURE TILT ADJUSTMENT

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| VIER FINDER | DEFLEC-TION COIL |  |  |

| M. EQ. | SPEC. |
|---|---|
| VIEW FINDER | RASTER IS STRAIGHT |

(1) Loosen the holding ring of deflection coil.
(2) Observe the viewfinder, and turn the deflection coil until the raster is straig.
(3) Tighten the hold reflection coil.

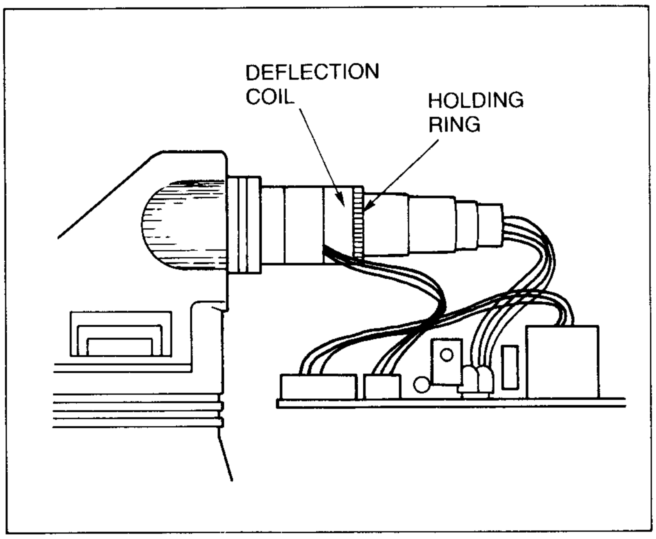


Fig.E36

## 2. HORIZONTAL HOLD ADJUSTMENT

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| P802-(2) | VR802 | | J CHART |

| M. EQ. | SPEC. |
|---|---|
| FREQUENCY COUNTER | 15.6kHz±0.1kHz |

(1) Connect the FREQUENCY COUNTER to P802-(2).
(2) Adjust VR802 so that the reading of the FREQUENCY COUNTER is 15.6KHz+-0.1KHz.

## 3. FOCUS CONTROL ADJUSTMENT

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| | VR804 | | BALL CHART |

| M. EQ. | SPEC. |
|---|---|
| VIEW FINDER | BEST RESOLUTION |

(1) Aim the camera at the ball chart and focus the lens on the object.
(2) Adjust VR804 to best resolution in the view finder.

## 4. EVF V-SIZE AND H-SIZE ADJUSTMENT

| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| | VR801 | | BALL CHART |

| M. EQ. | SPEC. |
|---|---|
| VIEW FINDER | DISAPPER THE BALL CHART EDGE TURE CIRCLE AS FIG. |

(1) Aim the camera at the ball chart, and line up the reference arrow head with edge of the raster (blanking) on the view finder.
(2) Then adjust the V.size (VR801) so that the circle in the chart is nearly a true circle.

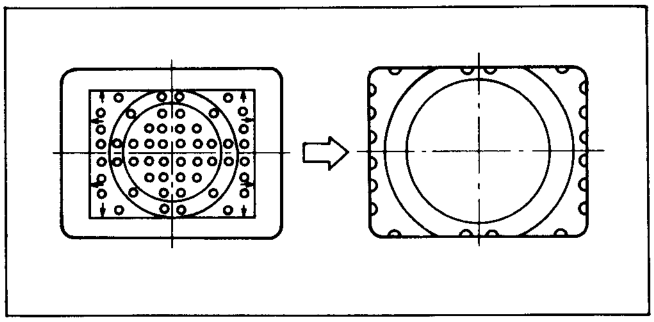


Fig. E37

## 5. CONTRAST AND BRIGHTNESS ADJUSTMENT

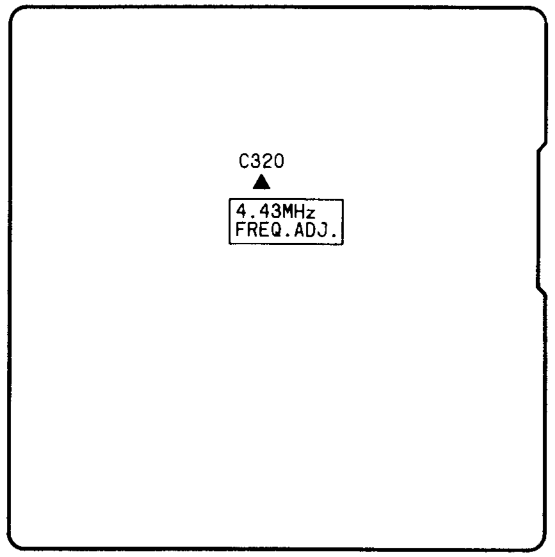
| TP | ADJ. | IRIS | CHART |
|---|---|---|---|
| | VR803<br>VR805 | | GRAY SCALE |

| M. EQ. | SPEC. |
|---|---|
| VIEW FINDER | MATURAL GRADATION |

(1) Aim the camera at the logarithmic gray scale chart.
(2) Adjust the contrast control (VR805) and brightness control (VR803) so that the black and white gradation will be the same on the view finder screen as that in the monitor.

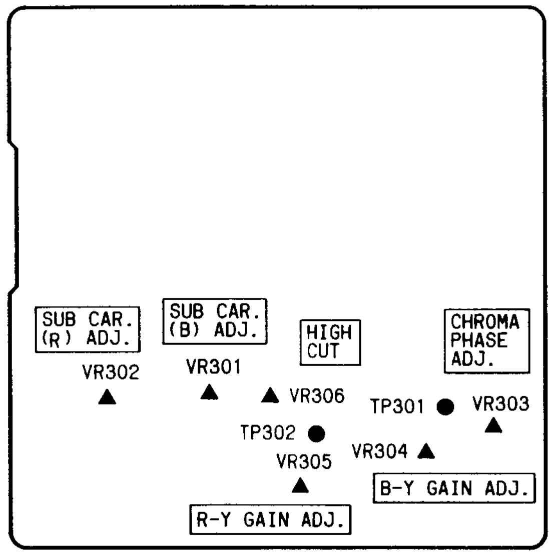
# LOCATION OF TEST POINTS & CONTROLS — Camera Section —

## PROCESS SUB (1) C.B.A.


C320
4.43MHz FREQ.ADJ.

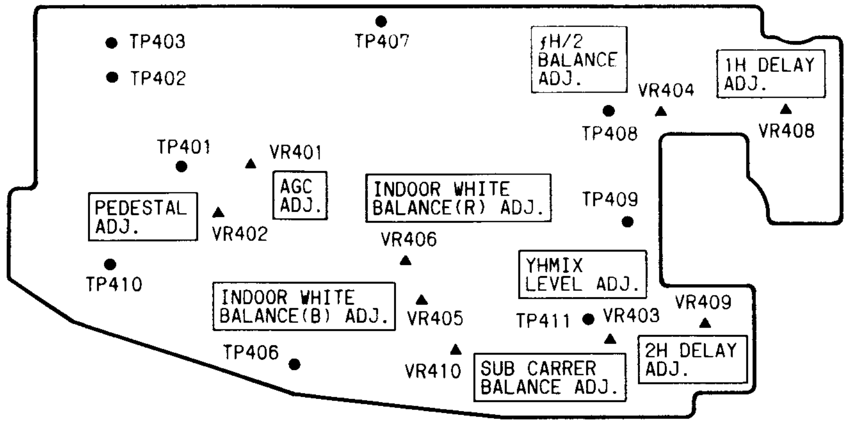
(COMPONENT SIDE)

## PROCESS SUB (1) C.B.A.


SUB CAR. (R) ADJ.
VR302
SUB CAR. (B) ADJ.
VR301
HIGH CUT
VR306
CHROMA PHASE ADJ.
TP301
VR303
TP302
VR305
VR304
B-Y GAIN ADJ.
R-Y GAIN ADJ.

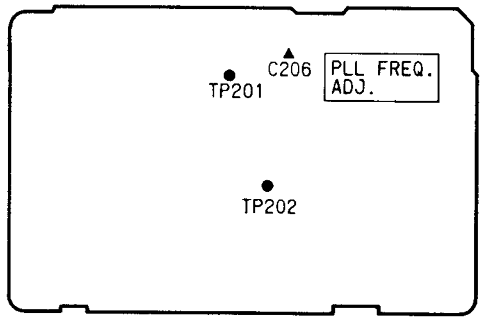
(FOIL SIDE)

## PROCESS C.B.A.


TP403
TP402
TP407
ƒH/2 BALANCE ADJ.
VR404
1H DELAY ADJ.
TP408
VR408
TP401
VR401
PEDESTAL ADJ.
VR402
AGC ADJ.
INDOOR WHITE BALANCE(R) ADJ.
VR406
TP409
TP410
YHMIX LEVEL ADJ.
INDOOR WHITE BALANCE(B) ADJ.
VR405
TP411
VR403
VR409
TP406
VR410
SUB CARRER BALANCE ADJ.
2H DELAY ADJ.

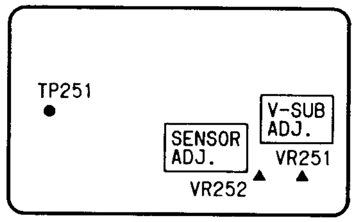
(FOIL SIDE)

## SENSOR (1) C.B.A.


TP201
C206
PLL FREQ. ADJ.
TP202

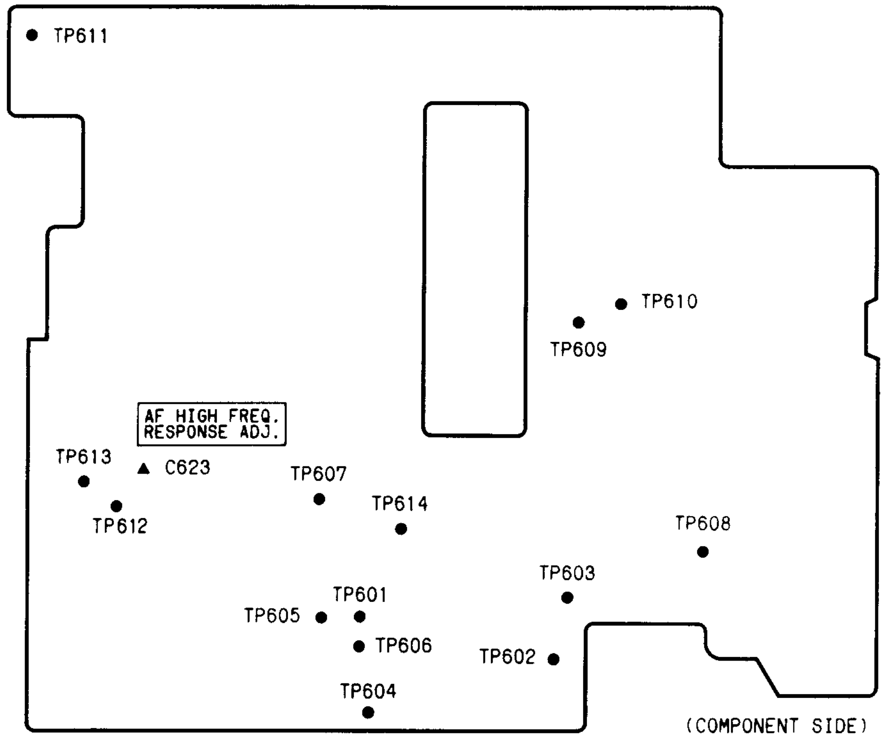
(COMPONENT SIDE)

## SENSOR (2) C.B.A.


TP251
V-SUB ADJ.
SENSOR ADJ.
VR251
VR252

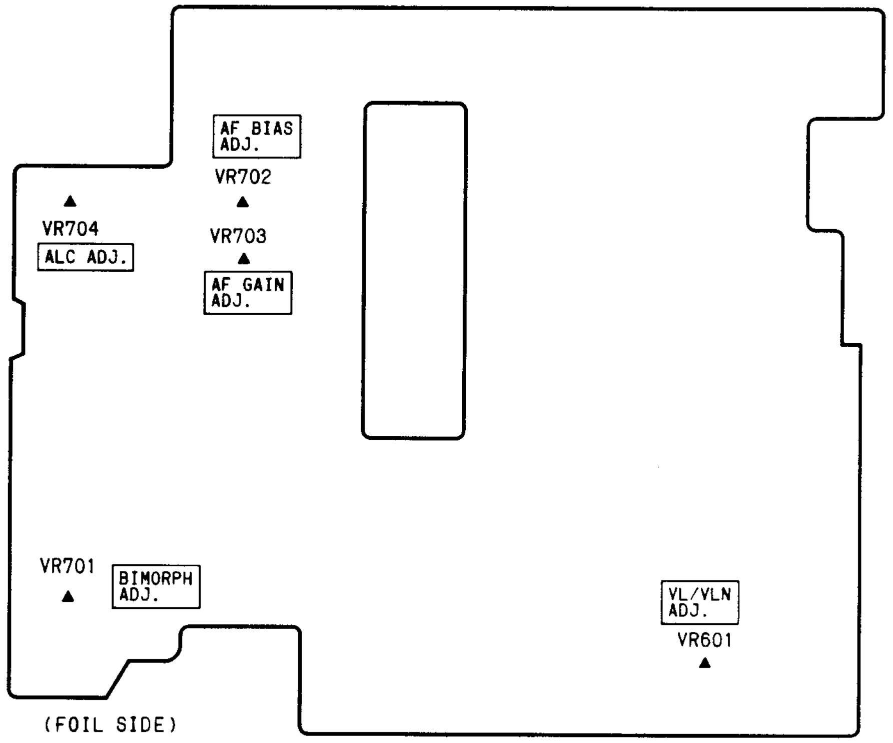
(COMPONENT SIDE)

## AUTO FOCUS C.B.A.


TP611
TP610
TP609
AF HIGH FREQ. RESPONSE ADJ.
TP613
C623
TP612
TP607
TP614
TP608
TP603
TP601
TP605
TP606
TP602
TP604

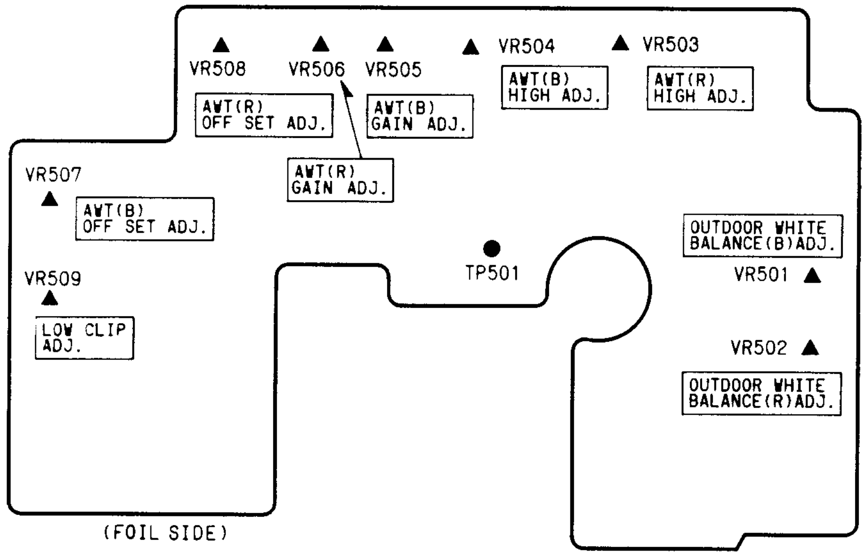
(COMPONENT SIDE)

## AUTO FOCUS C.B.A.


AF BIAS ADJ.
VR702
VR704
ALC ADJ.
VR703
AF GAIN ADJ.
VR701
BIMORPH ADJ.
VL/VLN ADJ.
VR601

(FOIL SIDE)

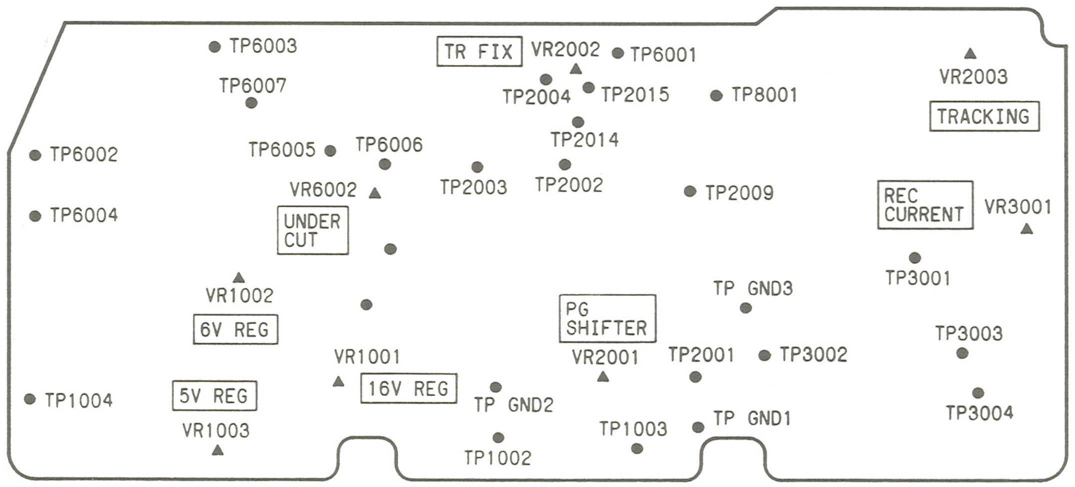
## AWT C.B.A.


VR508
VR506
VR505
VR504
VR503
AWT(R) OFF SET ADJ.
AWT(B) GAIN ADJ.
AWT(B) HIGH ADJ.
AWT(R) HIGH ADJ.
VR507
AWT(R) GAIN ADJ.
AWT(B) OFF SET ADJ.
OUTDOOR WHITE BALANCE(B)ADJ.
VR509
TP501
VR501
LOW CLIP ADJ.
VR502
OUTDOOR WHITE BALANCE(R)ADJ.

(FOIL SIDE)

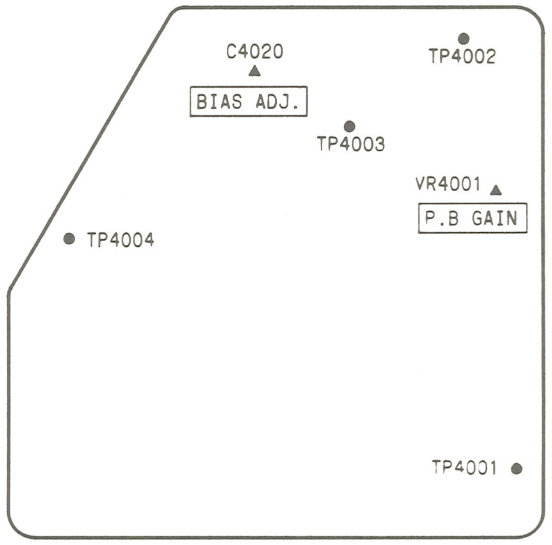
# LOCATION OF TEST POINTS & CONTROLS — VTR Section —

## MAIN C.B.A.


TP6003
TP6007
TR FIX
VR2002
TP6001
TP2004
TP2015
TP8001
VR2003
TRACKING
TP6002
TP6005
TP6006
TP2014
TP6004
VR6002
UNDER CUT
TP2003
TP2002
TP2009
REC CURRENT
VR3001
VR1002
6V REG
TP3001
TP GND3
PG SHIFTER
TP3003
VR1001
VR2001
TP2001
TP3002
TP1004
5V REG
16V REG
TP GND2
TP3004
VR1003
TP1003
TP GND1
TP1002

(COMPONENT SIDE)

## AUDIO C.B.A.


C4020
TP4002
BIAS ADJ.
TP4003
VR4001
P.B GAIN
TP4004
TP4001

(COMPONENT SIDE)

## 2-4-2. ELECTRICAL ADJUSTMENT FOR VTR SECTION

TEST EQUIPMENT AND TOOL

The following equipment is required for adjustment of the VTR section of NV-M5.

(1) VTVM (Vacuum Tube Volt Meter)
DVM (Digital Volt Meter)
Voltage Range : 0.01~50V
(2) Dual Trace Oscilloscope
Voltage Range : 0.06~50V/div
Frequency Range : 0~10MHz
Probe : 10:1 ro 1:1
(3) Frequency counter
Frequency Range : 0~10MHz
(4) Signal Generator (Sinewave)
Frequency Range : 0~10MHz
(5) Video Sweep Generator
Frequency Range : 0~10MHz
(6) Color Monitor TV
(7) Plastic Tip Driver
(8) VHS Alignment Tape

PREPARATION

(1) Remove the casing panels
(2) Supply the video signal to connector P3001-(4) or TP3006 on the video section as shown below.

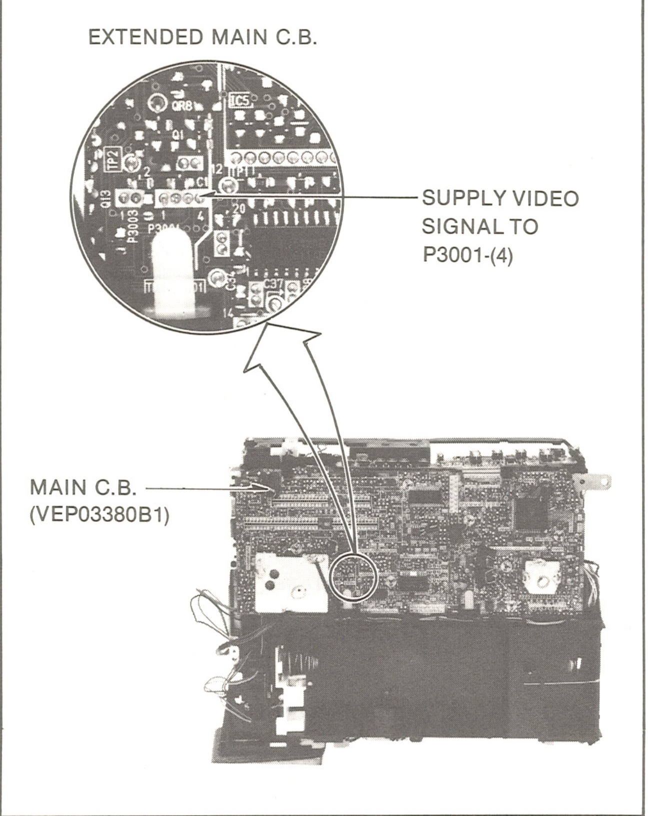

EXTENDED MAIN C.B.
SUPPLY VIDEO SIGNAL TO P3001-(4)
MAIN C.B.
(VEP03380B1)

Fig.E38

And connect a jumper wire between QR6017-(B) and GND or indicated points as shown below in order to operate the VTR unit.

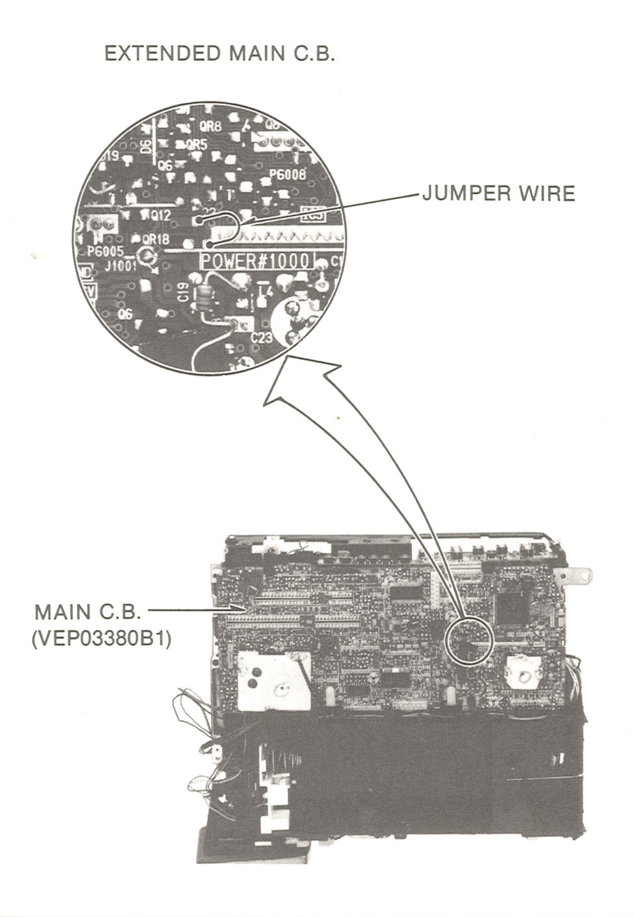

EXTENDED MAIN C.B.
JUMPER WIRE
MAIN C.B.
(VEP03380B1)

Fig.E39

(3) Supply the audio signal to MIC IN Jack.
(4) Suppy the power to the VTR recorder unit from AC Adaptor (VW-AM5) and connect one to the colour monitor as shown below.

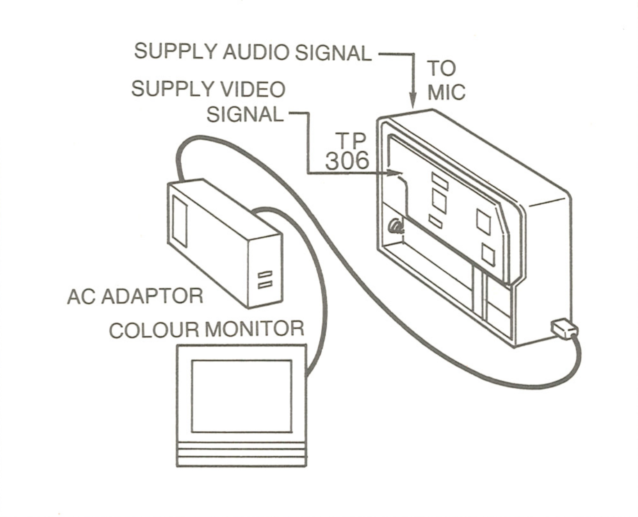
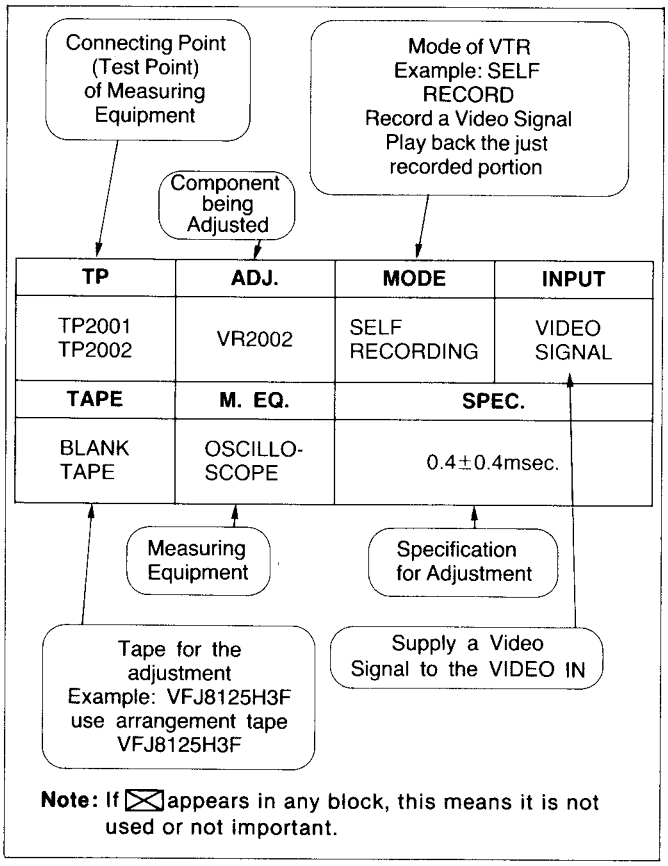

SUPPLY AUDIO SIGNAL
TO MIC
SUPPLY VIDEO SIGNAL
TP 306
AC ADAPTOR
COLOUR MONITOR

Fig.E40

## HOW TO READ THE ADJUSTMENT PROCEDURES


Connecting Point (Test Point) of Measuring Equipment
Component being Adjusted
Mode of VTR Example: SELF RECORD Record a Video Signal Play back the just recorded portion
TP
ADJ.
MODE
INPUT
TP2001 TP2002
VR2002
SELF RECORDING
VIDEO SIGNAL
TAPE
M. EQ.
SPEC.
BLANK TAPE
OSCILLO-SCOPE
0.4±0.4msec.
Measuring Equipment
Specification for Adjustment
Tape for the adjustment Example: VFJ8125H3F use arrangement tape VFJ8125H3F
Supply a Video Signal to the VIDEO IN

**Note:** If ☒ appears in any block, this means it is not used or not important.

Fig.E41

FOR TRIGGERING OF THE OSCILLOSCOPE

To trigger the Oscilloscope, the following test point is used.
H.rate : TP3002 (Video output)
V.rate : TP2001 (Head Switching signal)

## POWER SECTION

### 1. REG. 5V ADJUSTMENT

| TP | ADJ. | MODE | INPUT |
|---|---|---|---|
| TP1003 | VR1003 | REC·PLAY | ☒ |
| **TAPE** | **M. EQ.** | **SPEC.** | |
| BLANK TAPE | D.V.M | 4.73±0.03V | |

### 2. REG. 9V ADJUSTMENT

| TP | ADJ. | MODE | INPUT |
|---|---|---|---|
| TP1002 | VR1002 | REC·PLAY | ☒ |
| **TAPE** | **M. EQ.** | **SPEC.** | |
| BLANK TAPE | D.V.M | 8.7±0.05V | |

### 3. REG. 16V ADJUSTMENT

| TP | ADJ. | MODE | INPUT |
|---|---|---|---|
| TP1001 | VR1001 | REC·PLAY | ☒ |
| **TAPE** | **M. EQ.** | **SPEC.** | |
| BLANK TAPE | D.V.M | 15.5±0.05 | |

### 4. UNDER CUT ADJUSTMENT

| TP | ADJ. | MODE | INPUT |
|---|---|---|---|
| TP6005 | VR6002 | REC·PLAY | ☒ |
| **TAPE** | **M. EQ.** | **SPEC.** | |
| BLANK TAPE | OSCILLO-SCOPE | HGIH→PULSE→LOW | |

(1) Supply the DC voltage 10.5V+-0.03V to the conector P1001
P1001-(1)--(Minus)
P1001-(2)--(Plus)
(2) Connect the OSCILLOSCOPE to TP6005.
(3) Turn the under cut control (VR6002) fully counter clockwise.
(4) Turn VR6002 clockwise slowly until the wave form is changed from high to low though the pulse trains.

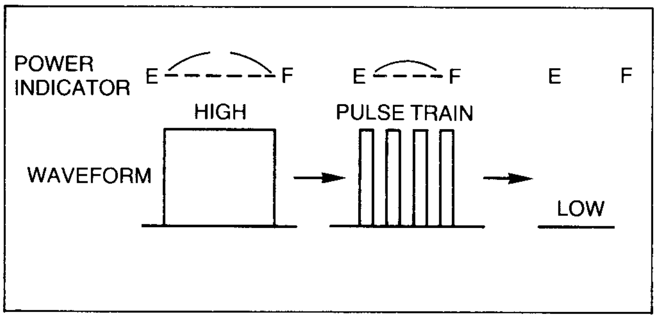

POWER INDICATOR
E
F
E
F
E
F
HIGH
PULSE TRAIN
WAVEFORM
LOW

Fig.E42

## SERVO SECTION

### 5. TRACKING FIX ADJUSTMENT

| TP | ADJ. | MODE | INPUT |
|---|---|---|---|
| TP2001<br>TP2002 | VR2002 | SELF RECORDING | VIDEO SIGNAL |
| **TAPE** | **M. EQ.** | **SPEC.** | |
| BLANK TAPE | OSCILLO-SCOPE | 0.4±0.4msec. | |

(1) Set the Tracking VR to the centre fix position.
(2) Record for a few minutes, and playback the just recorded portion.
(3) Adjust the tracking fix control (VR2002) so that the period of "T" is 0.4msec+-0.4msec as shown below.

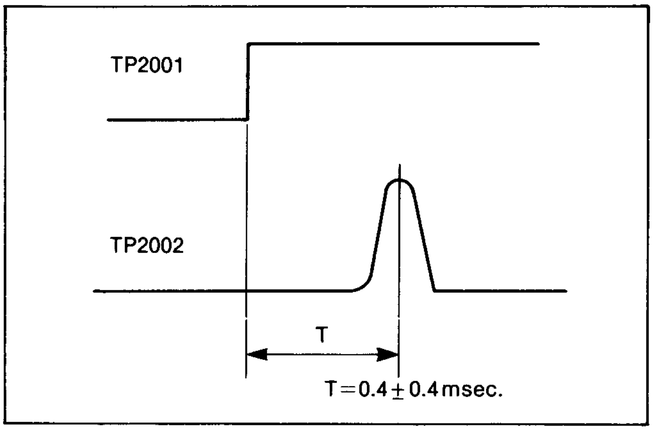

TP2001
TP2002
T
T=0.4±0.4msec.

Fig.E43

### 6. PG SHIFTER ADJUSTMENT

| TP | ADJ. | MODE | INPUT |
|---|---|---|---|
| TP2001<br>TP3002 | VR2001 | PLAY | |
| **TAPE** | **M. EQ.** | **SPEC.** | |
| ALIGNMENT TAPE (VFJ8125H3F) | OSCILLO-SCOPE | 6H±0.5H | |

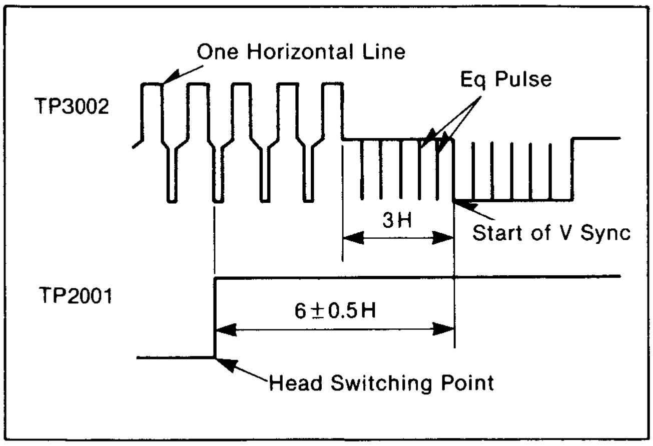

One Horizontal Line
Eq Pulse
TP3002
3H
Start of V Sync
TP2001
6±0.5H
Head Switching Point

Fig.E44

## LUMINANCE & CHROMINANCE SECTION

### 7. LUMINANCE RECORDING CURRENT ADJUSTMENT

| TP | ADJ. | MODE | INPUT |
|---|---|---|---|
| TP3003(HOT)<br>TP3004(GND) | VR3001 | REC·PLAY | VIDEO SIGNAL |
| **TAPE** | **M. EQ.** | **SPEC.** | |
| BLANK TAPE | OSCILLO-SCOPE | 290mV±10mVp-p | |

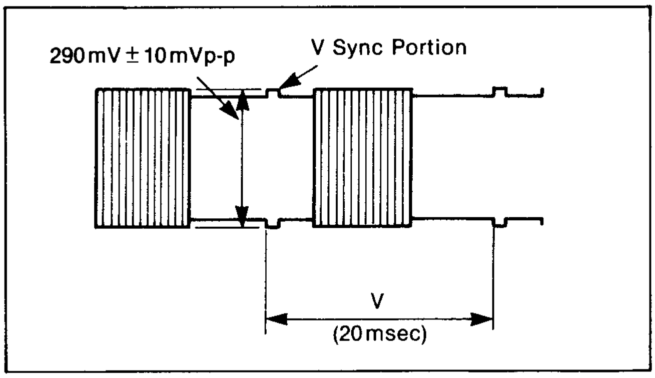

290mV±10mVp-p
V Sync Portion
V
(20msec)

Fig.E45

## AUDIO SECTION

### 8. AUDIO BIAS CURRENT ADJUSTMENT

| TP | ADJ. | MODE | INPUT |
|---|---|---|---|
| TP4002(HOT)<br>TP4003(GND) | C4020 | REC·PLAY | |
| **TAPE** | **M. EQ.** | **SPEC.** | |
| BLANK TAPE | D.V.M. | 3.1mV rms±0.1mV rms | |

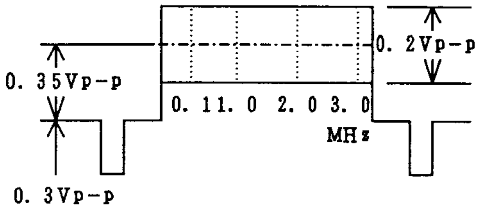
### 9. AUDIO PLAYBACK LEVEL ADJUSTMENT

| TP | ADJ. | MODE | INPUT |
|---|---|---|---|
| LINE OUT (TP4001) | VR4001 | SELF RECORDING | 1kHz, AUDIO −60dB SIGNAL/ VIDOE SIGNAL |
| **TAPE** | **M. EQ.** | **SPEC.** | |
| BLANK TAPE | SIGNAL GENERA-TOR/D.V.M. | EE LEVEL=−8.0±2db<br>P.B LEVEL=−±1dB | |

## 10. HEAD AMP FREQUENCY RESPONSE ADJUSTMENT

| TP | ADJ. | MODE | INPUT |
|---|---|---|---|
| TP3002<br>(VIDEO OUT) | VR5001 |  | VIDEO<br>SWEEP |
| **TAPE** | **M. EQ.** | **SPEC.** |  |
| BLANK<br>TAPE | VIDEO<br>SWEEP/<br>OSCILLO-<br>SCOPE |  |  |

1. Set the sweep generator output as shown below.


0. 35Vp-p
0. 2Vp-p
0. 1
1. 0
2. 0
3. 0
MHz
0. 3Vp-p

CONDITIONS: 1. BURST SIGNAL OFF
2. 75ohm TERMINATED

Fig.E46

2. Set the "EDIT SW" for off position.
3. Picture VR is center fix portion.
4. Playback the just recorded portion.
5. Adjust VR 5001 so that the waveform becomes as shown below.

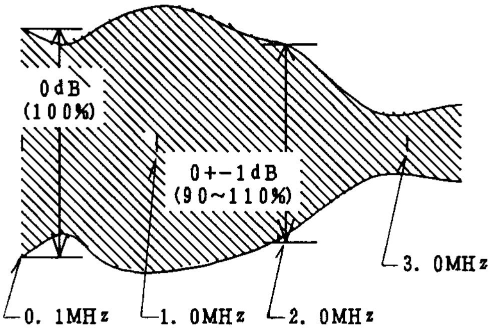
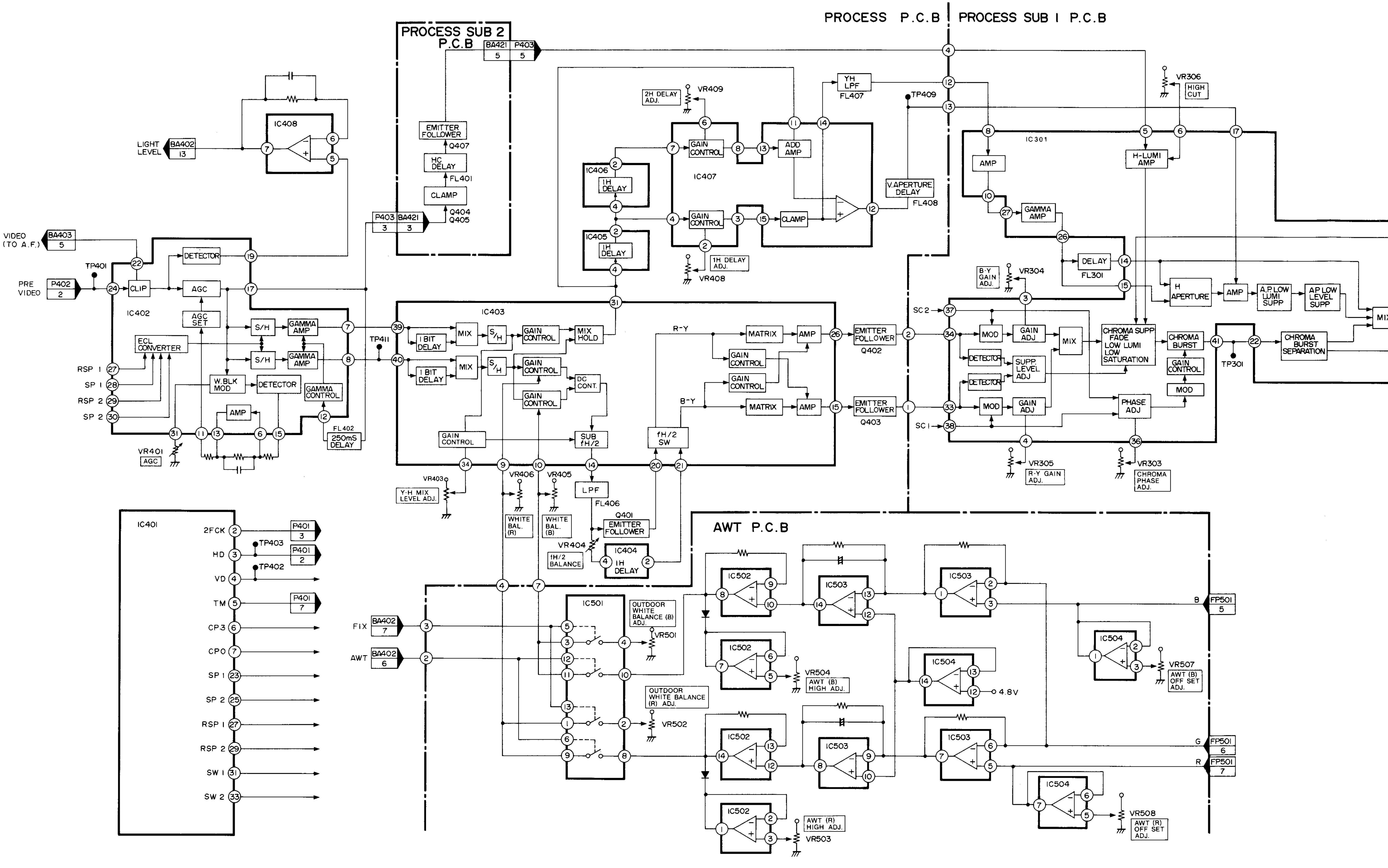
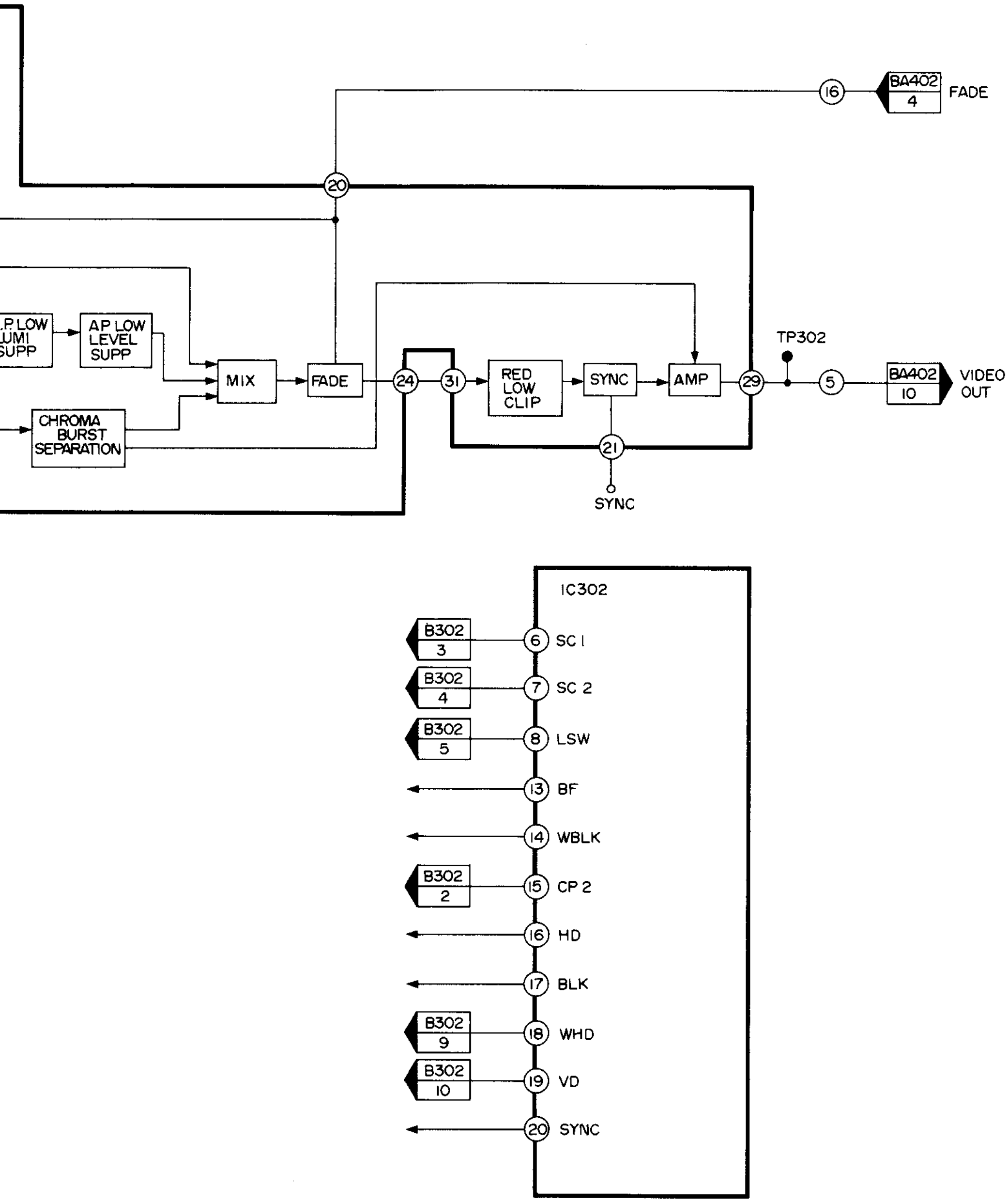

0dB
(100%)
0+-1dB
(90~110%)
3. 0MHz
0. 1MHz
1. 0MHz
2. 0MHz

Fig.E47

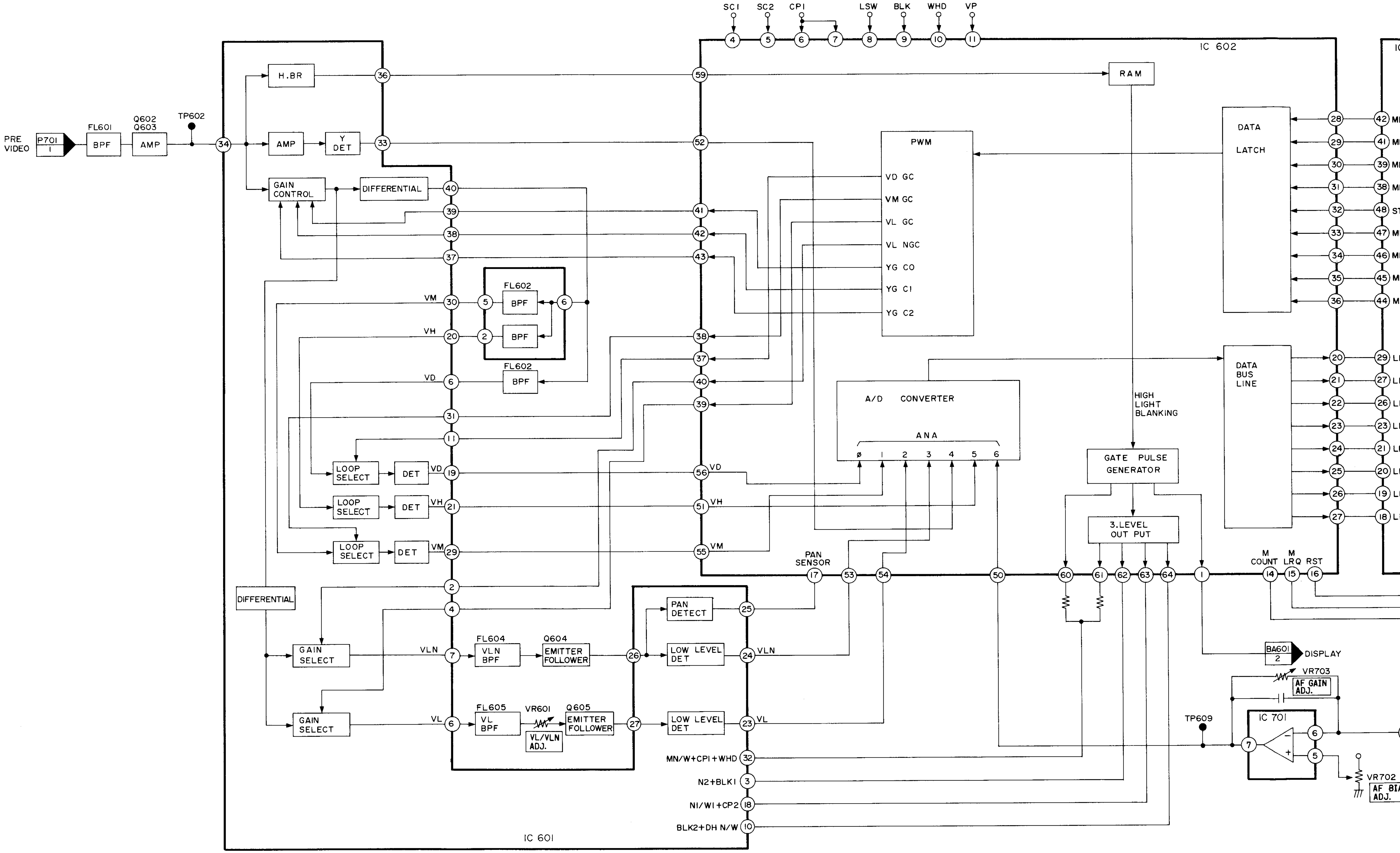
# SECTION 3
# BLOCK DIAGRAMS & SCHEMATIC DIAGRAMS
## 3-1. PROCESS BLOCK DIAGRAM

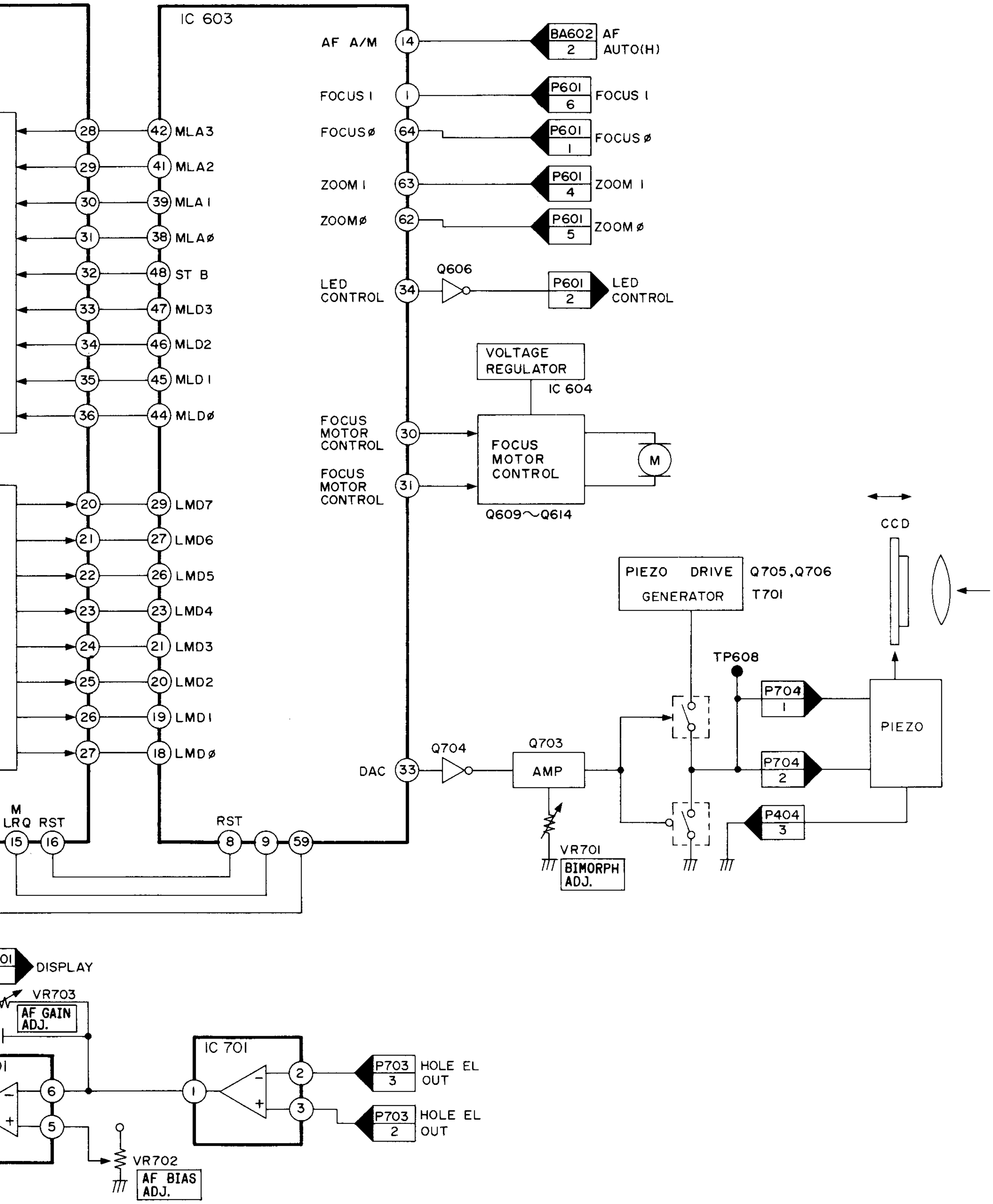

PROCESS P.C.B
PROCESS SUB 1 P.C.B
PROCESS SUB 2 P.C.B
BA421 P403
EMITTER FOLLOWER
Q407
HC DELAY
FL401
CLAMP
Q404
Q405
P403 BA421
LIGHT LEVEL
BA402 13
IC408
VIDEO (TO A.F.)
BA403 5
TP401
PRE VIDEO
P402 2
IC402
CLIP
DETECTOR
AGC
AGC SET
ECL CONVERTER
S/H
GAMMA AMP
W.BLK MOD
DETECTOR
GAMMA CONTROL
AMP
RSP 1
SP 1
RSP 2
SP 2
VR401
AGC
FL402
250mS DELAY
TP411
IC403
1 BIT DELAY
MIX
S/H
GAIN CONTROL
MIX HOLD
DC CONT.
GAIN CONTROL
SUB fH/2
fH/2 SW
R-Y
B-Y
MATRIX
AMP
EMITTER FOLLOWER
Q402
Q403
VR403
Y-H MIX LEVEL ADJ.
VR406
VR405
WHITE BAL. (R)
WHITE BAL. (B)
LPF
FL406
Q401
EMITTER FOLLOWER
VR404
fH/2 BALANCE
IC404
1H DELAY
2H DELAY ADJ.
VR409
IC406
1H DELAY
IC405
1H DELAY
1H DELAY ADJ.
VR408
IC407
GAIN CONTROL
ADD AMP
CLAMP
YH LPF
FL407
TP409
V.APERTURE DELAY
FL408
VR306
HIGH CUT
IC301
AMP
H-LUMI AMP
GAMMA AMP
DELAY
FL301
H APERTURE
AMP
A.P.LOW LUMI SUPP
AP LOW LEVEL SUPP
MI
B-Y GAIN ADJ.
VR304
SC2
SC1
MOD
GAIN ADJ
DETECTOR
SUPP. LEVEL ADJ
MIX
CHROMA SUPP FADE LOW LUMI LOW SATURATION
CHROMA BURST
GAIN CONTROL
MOD
PHASE ADJ
TP301
CHROMA BURST SEPARATION
VR305
R-Y GAIN ADJ.
VR303
CHROMA PHASE ADJ.
IC401
2FCK
HD
VD
TM
CP3
CP0
SP 1
SP 2
RSP 1
RSP 2
SW 1
SW 2
P401 3
TP403
P401 2
TP402
P401 7
AWT P.C.B
FIX
BA402 7
AWT
BA402 6
IC501
OUTDOOR WHITE BALANCE (B) ADJ.
VR501
OUTDOOR WHITE BALANCE (R) ADJ.
VR502
IC502
IC503
IC504
VR504
AWT (B) HIGH ADJ.
4.8V
VR507
AWT (B) OFF SET ADJ.
VR503
AWT (R) HIGH ADJ.
VR508
AWT (R) OFF SET ADJ.
B
G
R
FP501 5
FP501 6
FP501 7


16
BA402
4
FADE
20
.P LOW
UMI
SUPP
AP LOW
LEVEL
SUPP
MIX
FADE
24
31
RED
LOW
CLIP
SYNC
AMP
29
TP302
5
BA402
10
VIDEO
OUT
CHROMA
BURST
SEPARATION
21
SYNC
IC302
B302
3
6
SC 1
B302
4
7
SC 2
B302
5
8
LSW
13
BF
14
WBLK
B302
2
15
CP 2
16
HD
17
BLK
B302
9
18
WHD
B302
10
19
VD
20
SYNC

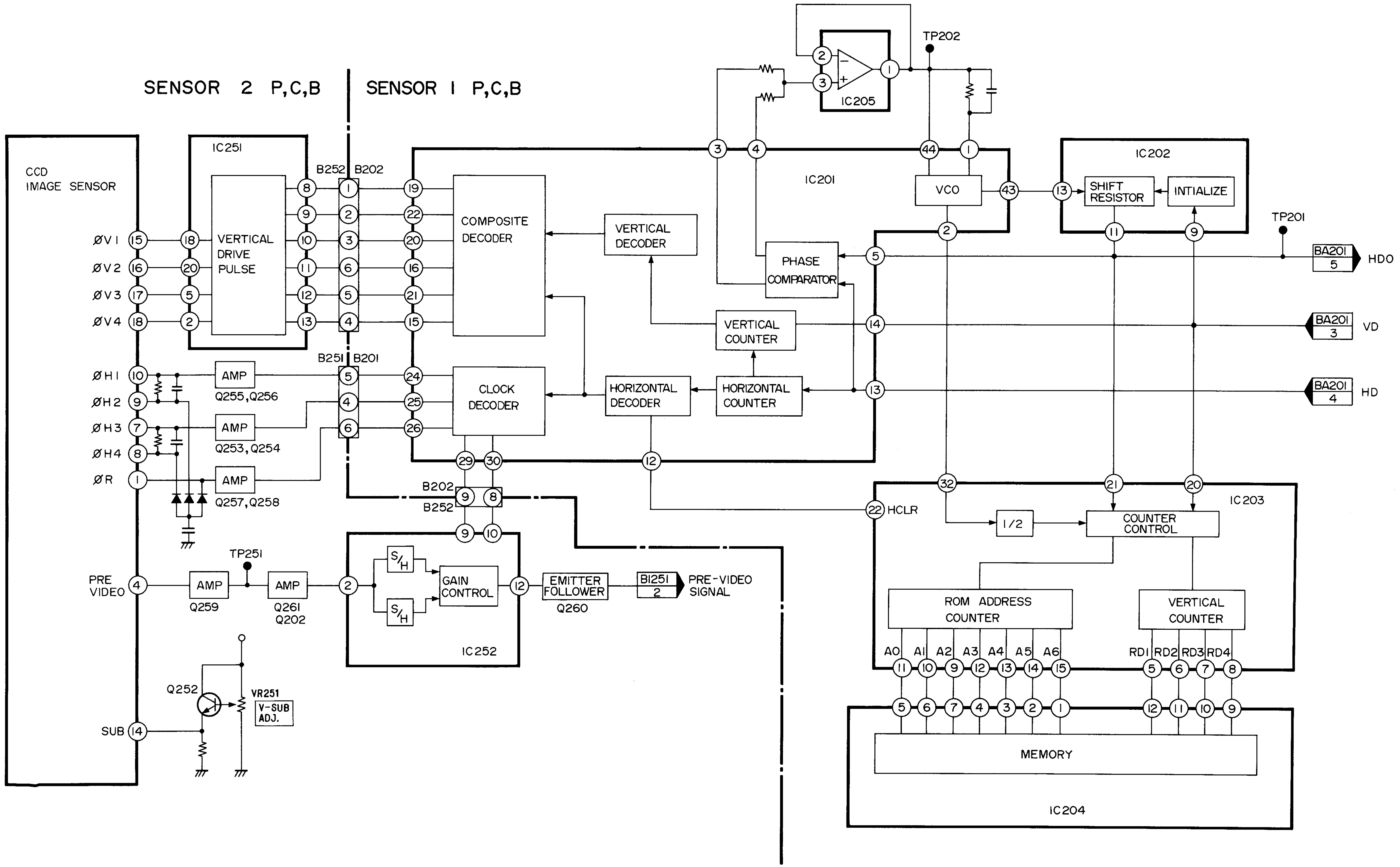
Next Page:
AUTO FOCUS Section

## 3-2. AUTO FOCUS BLOCK DIAGRAM

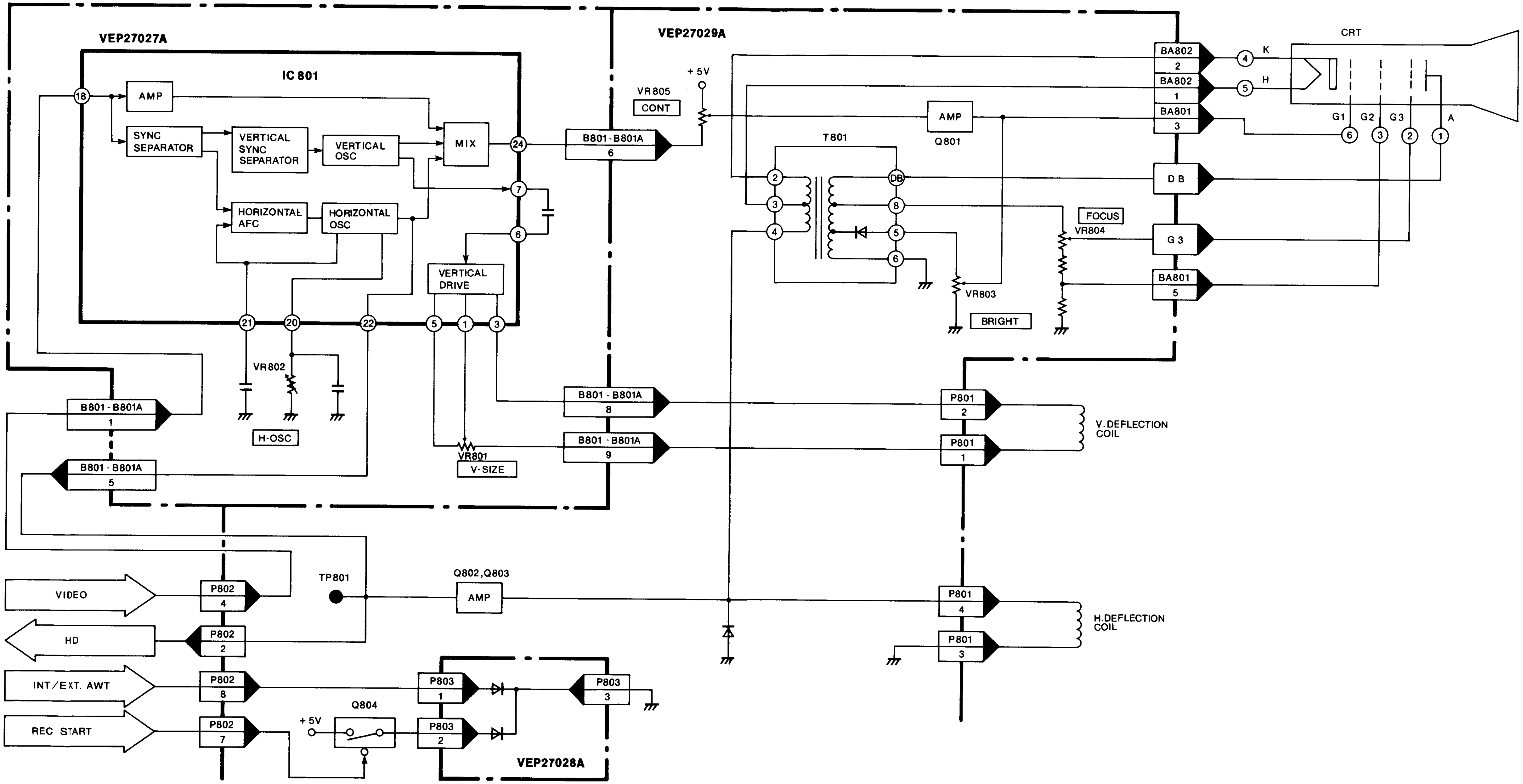

PRE VIDEO
P701
1
FL601
BPF
Q602
Q603
AMP
TP602
H.BR
AMP
Y DET
GAIN CONTROL
DIFFERENTIAL
FL602
BPF
BPF
FL602
BPF
VM
VH
VD
LOOP SELECT
DET
VD
LOOP SELECT
DET
VH
LOOP SELECT
DET
VM
DIFFERENTIAL
GAIN SELECT
VLN
GAIN SELECT
VL
FL604
VLN BPF
Q604
EMITTER FOLLOWER
FL605
VL BPF
VR601
VL/VLN ADJ.
Q605
EMITTER FOLLOWER
PAN DETECT
LOW LEVEL DET
VLN
LOW LEVEL DET
VL
MN/W+CP1+WHD
N2+BLK1
N1/W1+CP2
BLK2+DH N/W
IC 601
SC1
SC2
CP1
LSW
BLK
WHD
VP
IC 602
RAM
PWM
VD GC
VM GC
VL GC
VL NGC
YG C0
YG C1
YG C2
DATA LATCH
A/D CONVERTER
ANA
Ø 1 2 3 4 5 6
VD
VH
VM
HIGH LIGHT BLANKING
GATE PULSE GENERATOR
3.LEVEL OUT PUT
DATA BUS LINE
PAN SENSOR
M COUNT
M LRQ
RST
BA601
2
DISPLAY
VR703
AF GAIN ADJ.
TP609
IC 701
VR702
AF BI
ADJ.
IC


IC 603
AF A/M
14
BA602
2
AF
AUTO(H)
FOCUS I
1
P601
6
FOCUS I
FOCUSØ
64
P601
1
FOCUS Ø
ZOOM I
63
P601
4
ZOOM I
ZOOMØ
62
P601
5
ZOOM Ø
LED
CONTROL
34
Q606
P601
2
LED
CONTROL
VOLTAGE
REGULATOR
IC 604
FOCUS
MOTOR
CONTROL
30
FOCUS
MOTOR
CONTROL
31
FOCUS
MOTOR
CONTROL
M
Q609～Q614
28
42
MLA3
29
41
MLA2
30
39
MLA I
31
38
MLAØ
32
48
ST B
33
47
MLD3
34
46
MLD2
35
45
MLD I
36
44
MLDØ
20
29
LMD7
21
27
LMD6
22
26
LMD5
23
23
LMD4
24
21
LMD3
25
20
LMD2
26
19
LMD I
27
18
LMDØ
M
LRQ
RST
15
16
RST
8
9
59
CCD
PIEZO DRIVE
GENERATOR
Q705,Q706
T701
TP608
P704
1
P704
2
PIEZO
DAC
33
Q704
Q703
AMP
P404
3
VR701
BIMORPH
ADJ.
01
DISPLAY
VR703
AF GAIN
ADJ.
01
6
5
IC 701
1
2
3
P703
3
HOLE EL
OUT
P703
2
HOLE EL
OUT
VR702
AF BIAS
ADJ.

## 3-3. CCD DRIVE BLOCK DIAGRAM

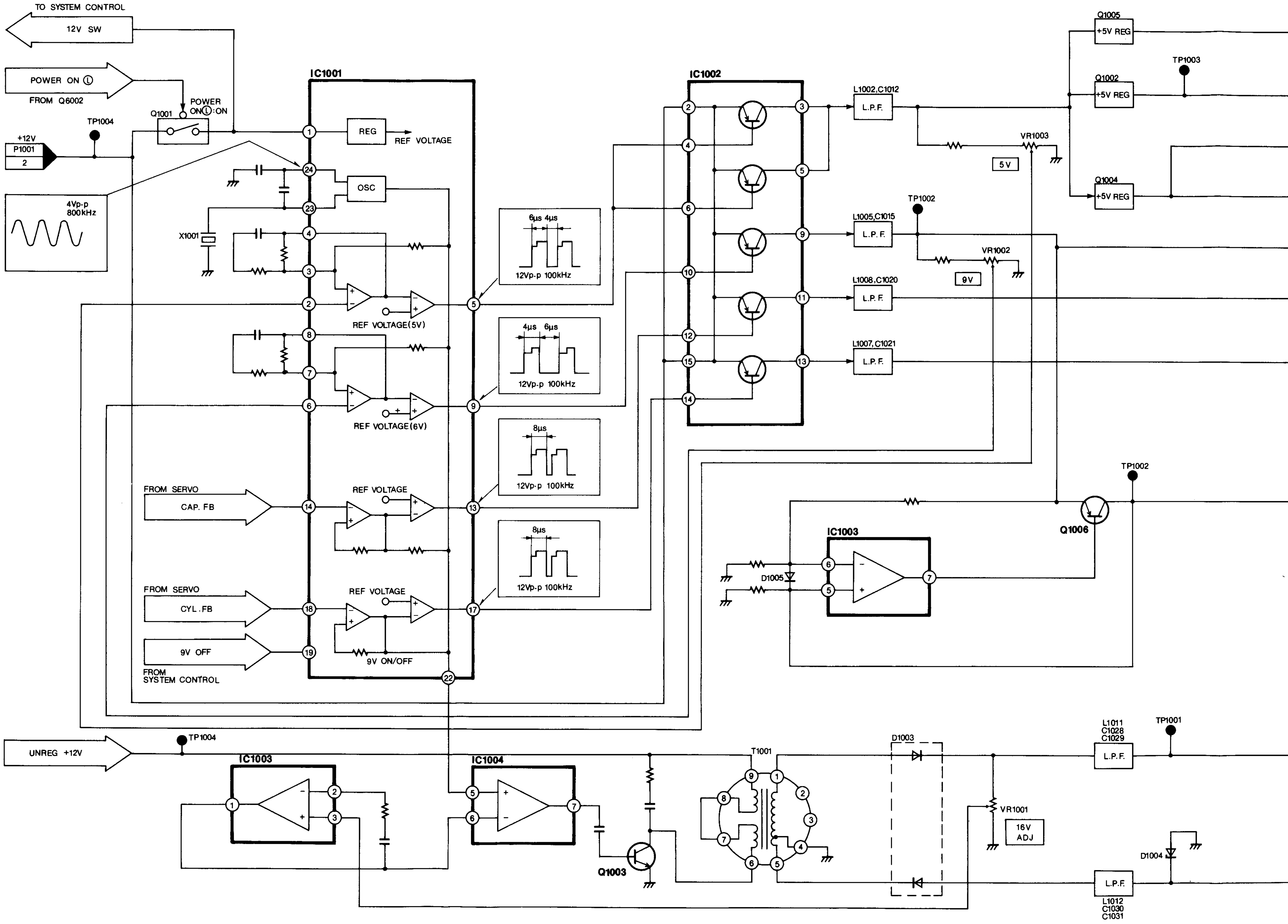

SENSOR 2 P,C,B
SENSOR 1 P,C,B
CCD IMAGE SENSOR
ØV1
ØV2
ØV3
ØV4
ØH1
ØH2
ØH3
ØH4
ØR
PRE VIDEO
SUB
IC251
VERTICAL DRIVE PULSE
B252
B202
B251
B201
AMP
Q255,Q256
Q253,Q254
Q257,Q258
TP251
Q259
Q261 Q202
Q252
VR251
V-SUB ADJ.
S/H
GAIN CONTROL
IC252
EMITTER FOLLOWER
Q260
B1251 2
PRE-VIDEO SIGNAL
IC201
COMPOSITE DECODER
CLOCK DECODER
VERTICAL DECODER
VERTICAL COUNTER
HORIZONTAL DECODER
HORIZONTAL COUNTER
PHASE COMPARATOR
VCO
IC205
TP202
TP201
IC202
SHIFT RESISTOR
INTIALIZE
BA201 5
HDO
BA201 3
VD
BA201 4
HD
IC203
HCLR
1/2
COUNTER CONTROL
ROM ADDRESS COUNTER
VERTICAL COUNTER
A0
A1
A2
A3
A4
A5
A6
RD1
RD2
RD3
RD4
MEMORY
IC204

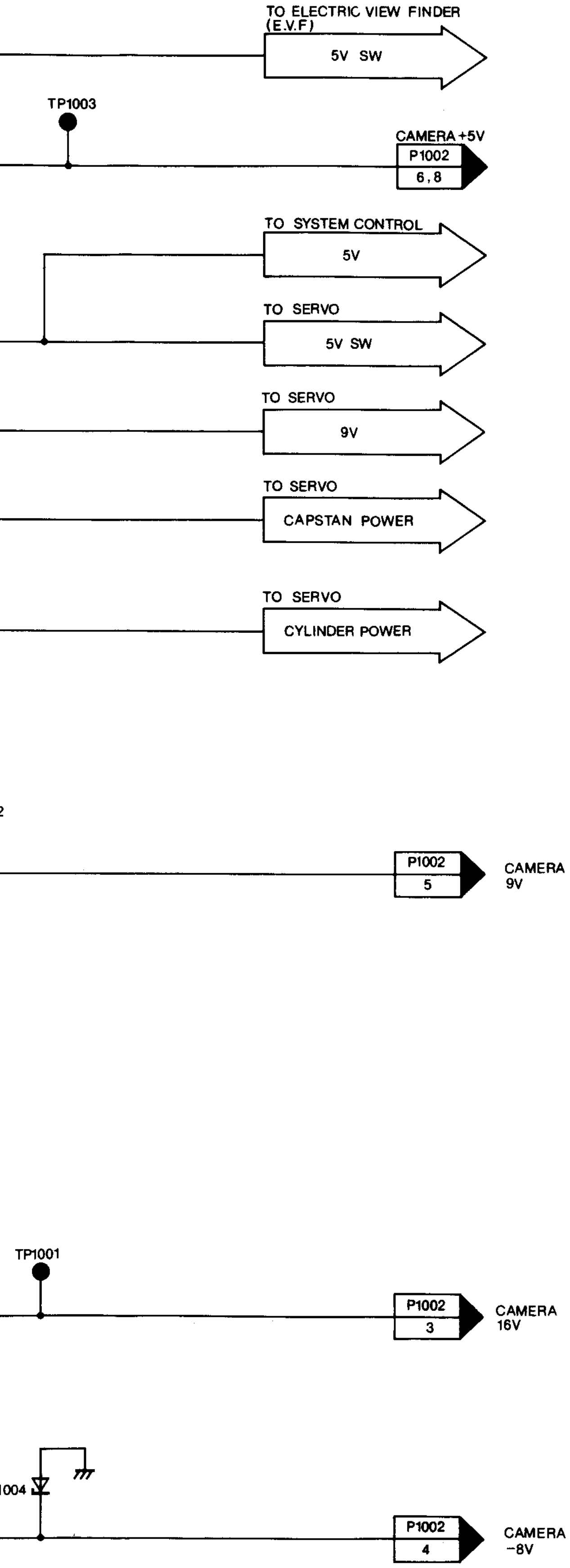
## 3-4. E.V.F BLOCK DIAGRAM


VEP27027A
IC 801
AMP
SYNC SEPARATOR
VERTICAL SYNC SEPARATOR
VERTICAL OSC
MIX
HORIZONTAL AFC
HORIZONTAL OSC
VERTICAL DRIVE
18
24
7
6
21
20
22
5
1
3
VR802
H-OSC
VR801
V-SIZE
B801 - B801A
1
5
6
8
9
VEP27029A
+5V
VR805
CONT
AMP
Q801
T801
2
3
4
DB
8
5
6
VR803
BRIGHT
FOCUS
VR804
BA802
2
BA802
1
BA801
3
D B
G 3
BA801
5
CRT
K
H
4
5
G1
G2
G3
A
6
3
2
1
P801
2
P801
1
V.DEFLECTION COIL
P801
4
P801
3
H.DEFLECTION COIL
TP801
Q802,Q803
AMP
VIDEO
HD
INT/EXT. AWT
REC START
P802
4
P802
2
P802
8
P802
7
+5V
Q804
P803
1
P803
2
P803
3
VEP27028A

Back Page:
CCD DRIVE Section

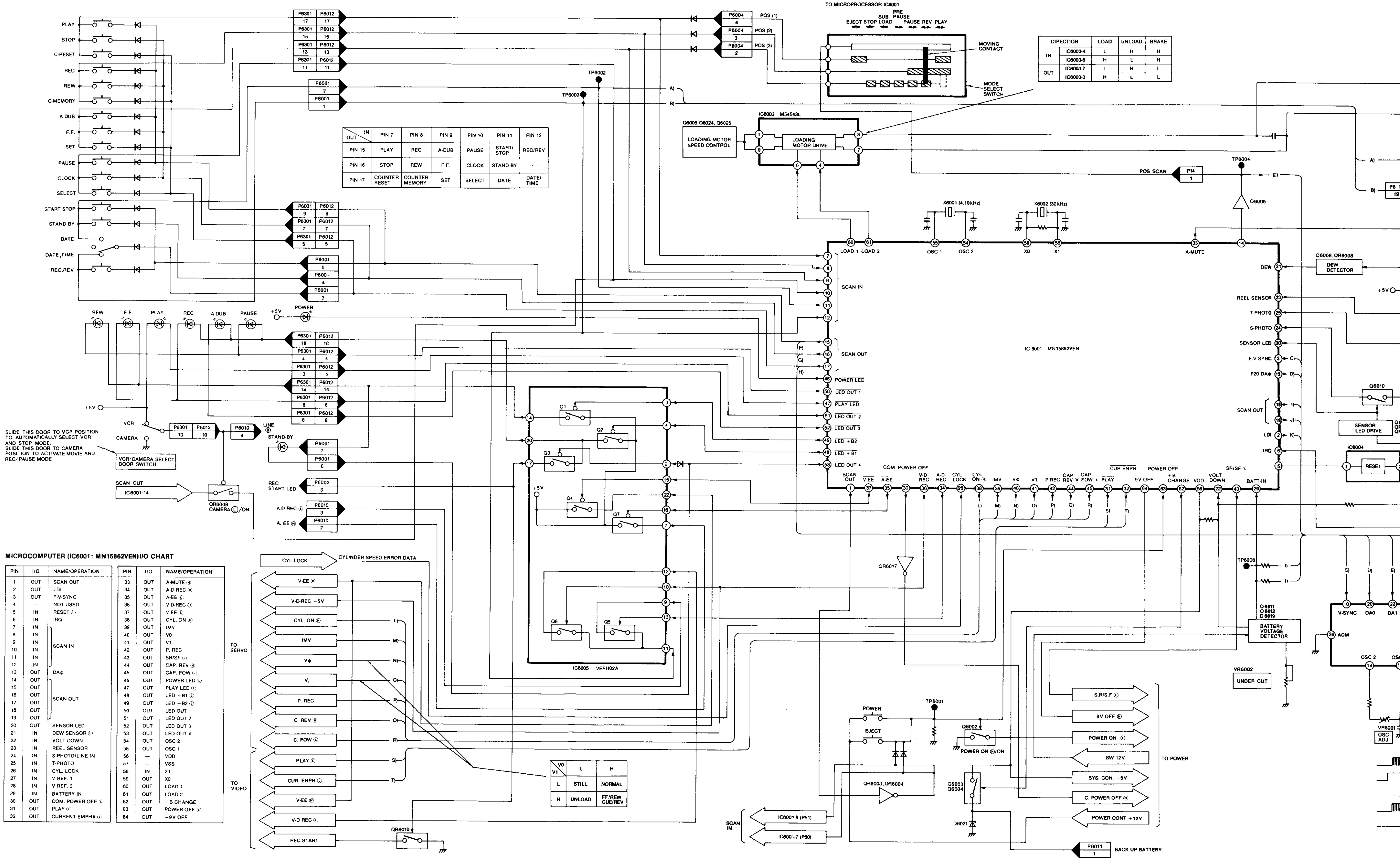
## 3-5. POWER SUPPLY BLOCK DIAGRAM


TO SYSTEM CONTROL
12V SW
POWER ON Ⓛ
FROM Q6002
POWER ONⓁ:ON
Q1001
TP1004
+12V
P1001
2
4Vp-p
800kHz
IC1001
REG
REF VOLTAGE
OSC
X1001
REF VOLTAGE(5V)
REF VOLTAGE(6V)
FROM SERVO
CAP. FB
REF VOLTAGE
FROM SERVO
CYL. FB
REF VOLTAGE
9V OFF
FROM
SYSTEM CONTROL
9V ON/OFF
6μs 4μs
12Vp-p 100kHz
4μs 6μs
12Vp-p 100kHz
8μs
12Vp-p 100kHz
8μs
12Vp-p 100kHz
IC1002
L1002,C1012
L.P.F.
L1005,C1015
L.P.F.
L1008,C1020
L.P.F.
L1007,C1021
L.P.F.
TP1002
VR1003
5V
VR1002
9V
Q1005
+5V REG
TP1003
Q1002
+5V REG
Q1004
+5V REG
TP1002
Q1006
IC1003
D1005
UNREG +12V
TP1004
IC1003
IC1004
Q1003
T1001
D1003
VR1001
16V
ADJ
L1011
C1028
C1029
L.P.F.
TP1001
D1004
L.P.F.
L1012
C1030
C1031


TO ELECTRIC VIEW FINDER (E.V.F)
5V SW
TP1003
CAMERA +5V
P1002
6,8
TO SYSTEM CONTROL
5V
TO SERVO
5V SW
TO SERVO
9V
TO SERVO
CAPSTAN POWER
TO SERVO
CYLINDER POWER
2
P1002
5
CAMERA 9V
TP1001
P1002
3
CAMERA 16V
1004
P1002
4
CAMERA −8V

Next Page:
SYSTEM CONTROL Section

# 3-6. SYSTEM CONTROL BLOCK DIAGRAM


PLAY
STOP
C-RESET
REC
REW
C-MEMORY
A-DUB
F.F.
SET
PAUSE
CLOCK
SELECT
START STOP
STAND BY
DATE
DATE, TIME
REC, REV
P6301
P6012
P6001
P6010
P6002
P6004
POS (1)
POS (2)
POS (3)
TP6002
TP6003
TP6001
TP6004
TP6006
TO MICROPROCESSOR IC6001
EJECT STOP LOAD
SUB PRE PAUSE PAUSE REV PLAY
MOVING CONTACT
MODE SELECT SWITCH
IC6003 M54543L
Q6005 Q6024, Q6025
LOADING MOTOR SPEED CONTROL
LOADING MOTOR DRIVE
POS SCAN
P14
Q6005
X6001 (4.19kHz)
X6002 (32kHz)
LOAD 1
LOAD 2
OSC 1
OSC 2
X0
X1
A-MUTE
SCAN IN
SCAN OUT
POWER LED
LED OUT 1
PLAY LED
LED OUT 2
LED OUT 3
LED + B2
LED + B1
LED OUT 4
IC 6001 MN15862VEN
DEW
REEL SENSOR
T-PHOTO
S-PHOTO
SENSOR LED
F-V SYNC
P20 DAφ
LDI
IRQ
Q6008, QR6008
DEW DETECTOR
Q6010
SENSOR LED DRIVE
IC6004
RESET
COM. POWER OFF
V-EE
A-EE
V-D REC
A-D REC
CYL LOCK
CYL ON Ⓗ
IMV
Vφ
V1
P-REC
CAP REV Ⓗ
CAP FOW Ⓛ
PLAY
CUR ENPH
POWER OFF
9V OFF
+B CHANGE
VDD
VOLT DOWN
SR/SF Ⓛ
BATT IN
REW
F.F.
PLAY
REC
A-DUB
PAUSE
+5V
POWER
VCR
CAMERA
SLIDE THIS DOOR TO VCR POSITION TO AUTOMATICALLY SELECT VCR AND STOP MODE.
SLIDE THIS DOOR TO CAMERA POSITION TO ACTIVATE MOVIE AND REC/PAUSE MODE
VCR/CAMERA SELECT DOOR SWITCH
LINE Ⓡ
STAND-BY
SCAN OUT
IC6001-14
QR6009 CAMERA Ⓛ/ON
REC START LED
A.D REC Ⓛ
A. EE Ⓗ
IC6005 VEFH02A
Q1
Q2
Q3
Q4
Q5
Q6
Q7
CYL LOCK
CYLINDER SPEED ERROR DATA
V-EE Ⓗ
V-D-REC +5V
CYL. ON Ⓗ
IMV
Vφ
V1
P. REC
C. REV Ⓗ
C. FOW Ⓛ
PLAY Ⓛ
CUR. ENPH Ⓛ
V-EE Ⓗ
V-D REC Ⓛ
REC START
TO SERVO
TO VIDEO
QR6010
QR6017
POWER
EJECT
QR6003, QR6004
Q6002
POWER ON Ⓗ/ON
Q6003 Q6004
D6021
SCAN IN
IC6001-8 (P51)
IC6001-7 (P50)
S.R/S.F Ⓛ
9V OFF Ⓗ
POWER ON Ⓛ
SW 12V
SYS. CON. +5V
C. POWER OFF Ⓗ
POWER CONT +12V
TO POWER
P6011
BACK UP BATTERY
Q6011 Q6012 D6019
BATTERY VOLTAGE DETECTOR
VR6002
UNDER CUT
V-SYNC
DA0
DA1
ADM
OSC 2
VR6001
OSC ADJ

| OUT \ IN | PIN 7 | PIN 8 | PIN 9 | PIN 10 | PIN 11 | PIN 12 |
|---|---|---|---|---|---|---|
| PIN 15 | PLAY | REC | A-DUB | PAUSE | START/ STOP | REC/REV |
| PIN 16 | STOP | REW | F.F. | CLOCK | STAND-BY | —— |
| PIN 17 | COUNTER RESET | COUNTER MEMORY | SET | SELECT | DATE | DATE/ TIME |

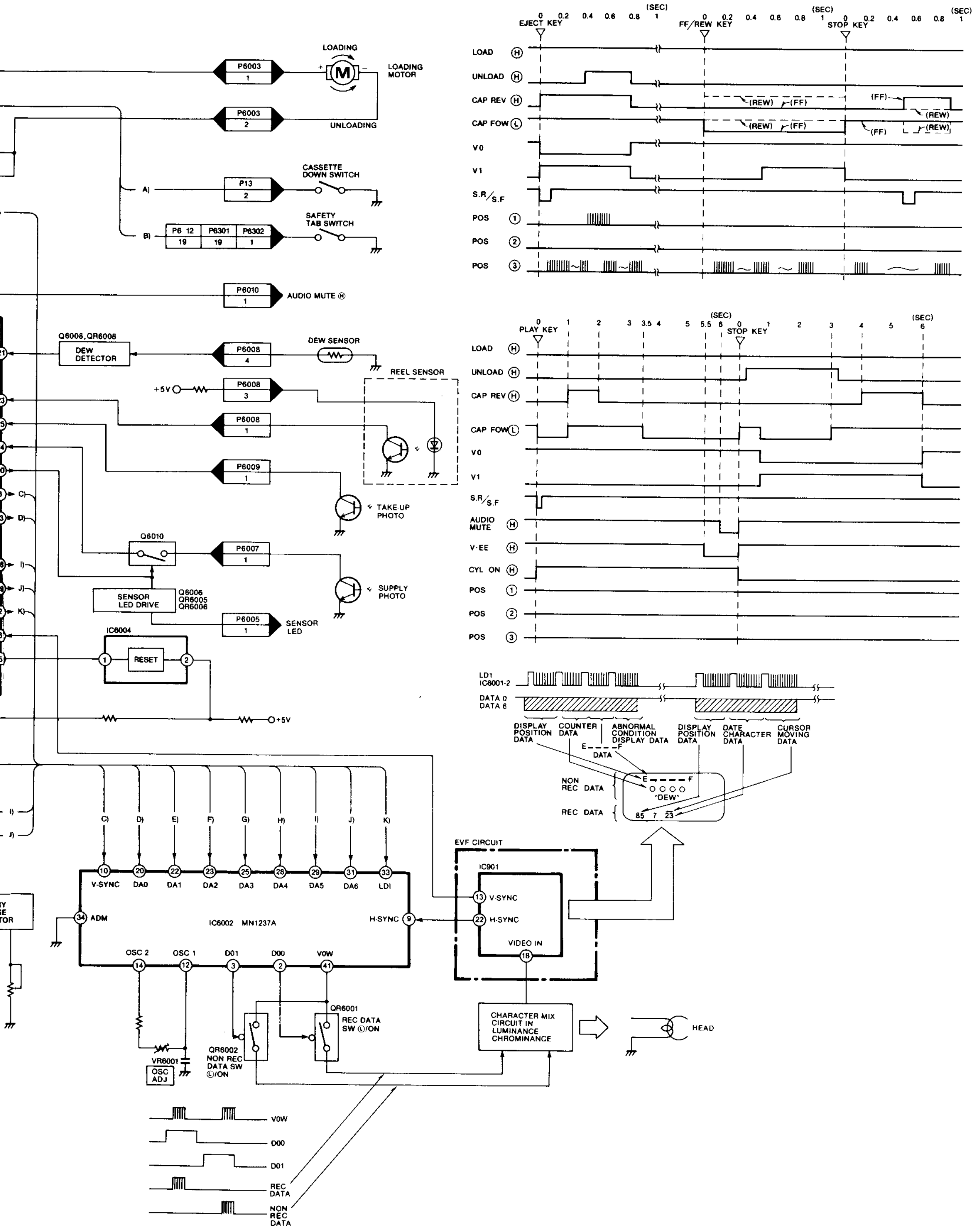
| DIRECTION | | LOAD | UNLOAD | BRAKE |
|---|---|---|---|---|
| IN | IC6003-4 | L | H | H |
| | IC6003-6 | H | L | H |
| OUT | IC6003-7 | L | H | L |
| | IC6003-3 | H | L | L |

| V1 \ V0 | L | H |
|---|---|---|
| L | STILL | NORMAL |
| H | UNLOAD | FF/REW CUE/REV |

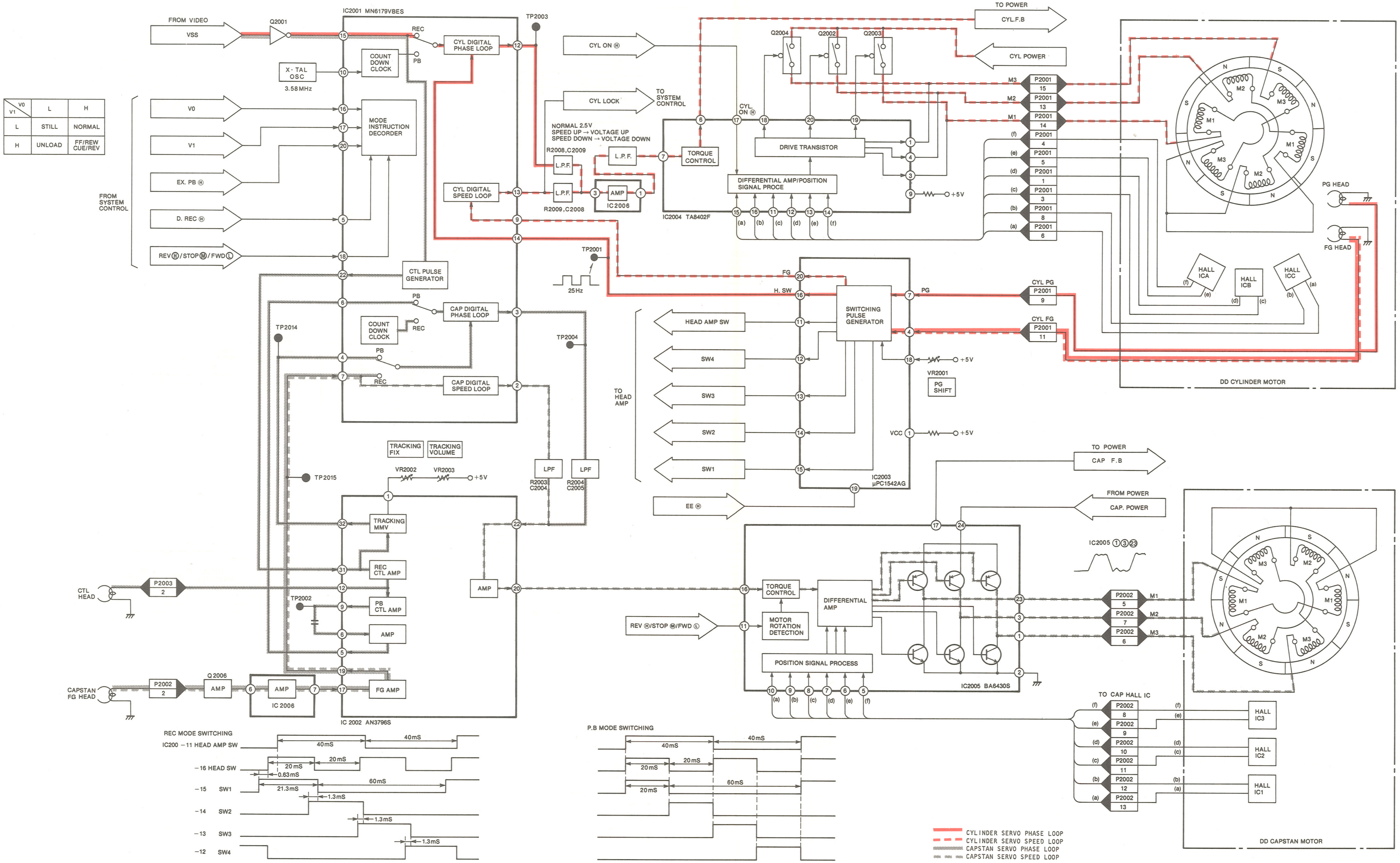
## MICROCOMPUTER (IC6001: MN15862VEN) I/O CHART

| PIN | I/O | NAME/OPERATION |
|---|---|---|
| 1 | OUT | SCAN OUT |
| 2 | OUT | LDI |
| 3 | OUT | F-V-SYNC |
| 4 | — | NOT USED |
| 5 | IN | RESET Ⓛ |
| 6 | IN | IRQ |
| 7 | IN | SCAN IN |
| 8 | IN | |
| 9 | IN | |
| 10 | IN | |
| 11 | IN | |
| 12 | IN | |
| 13 | OUT | DAφ |
| 14 | OUT | SCAN OUT |
| 15 | OUT | |
| 16 | OUT | |
| 17 | OUT | |
| 18 | OUT | |
| 19 | OUT | |
| 20 | OUT | SENSOR LED |
| 21 | IN | DEW SENSOR Ⓛ |
| 22 | IN | VOLT DOWN |
| 23 | IN | REEL SENSOR |
| 24 | IN | S-PHOTO/LINE IN |
| 25 | IN | T-PHOTO |
| 26 | IN | CYL. LOCK |
| 27 | IN | V REF. 1 |
| 28 | IN | V REF. 2 |
| 29 | IN | BATTERY IN |
| 30 | OUT | COM. POWER OFF Ⓛ |
| 31 | OUT | PLAY Ⓛ |
| 32 | OUT | CURRENT EMPHA Ⓛ |

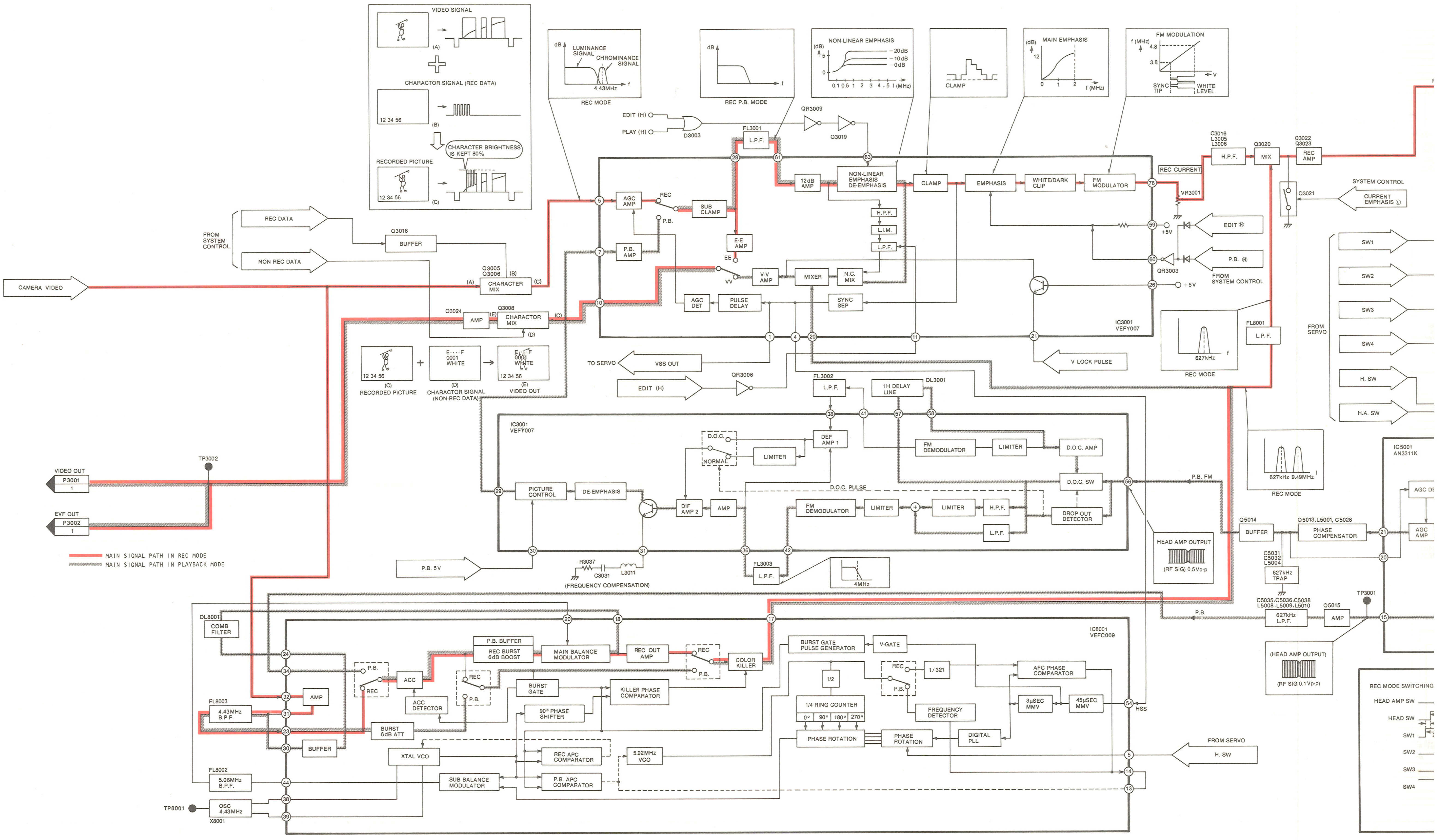
| PIN | I/O | NAME/OPERATION |
|---|---|---|
| 33 | OUT | A-MUTE Ⓗ |
| 34 | OUT | A-D-REC Ⓗ |
| 35 | OUT | A-EE Ⓛ |
| 36 | OUT | V-D-REC Ⓗ |
| 37 | OUT | V-EE Ⓛ |
| 38 | OUT | CYL. ON Ⓗ |
| 39 | OUT | IMV |
| 40 | OUT | V0 |
| 41 | OUT | V1 |
| 42 | OUT | P. REC |
| 43 | OUT | SR/SF Ⓛ |
| 44 | OUT | CAP. REV Ⓗ |
| 45 | OUT | CAP. FOW Ⓛ |
| 46 | OUT | POWER LED Ⓛ |
| 47 | OUT | PLAY LED Ⓛ |
| 48 | OUT | LED +B1 Ⓛ |
| 49 | OUT | LED +B2 Ⓛ |
| 50 | OUT | LED OUT 1 |
| 51 | OUT | LED OUT 2 |
| 52 | OUT | LED OUT 3 |
| 53 | OUT | LED OUT 4 |
| 54 | OUT | OSC 2 |
| 55 | OUT | OSC 1 |
| 56 | — | VDD |
| 57 | — | VSS |
| 58 | IN | X1 |
| 59 | OUT | X0 |
| 60 | OUT | LOAD 1 |
| 61 | OUT | LOAD 2 |
| 62 | OUT | +B CHANGE |
| 63 | OUT | POWER OFF Ⓛ |
| 64 | OUT | +9V OFF |

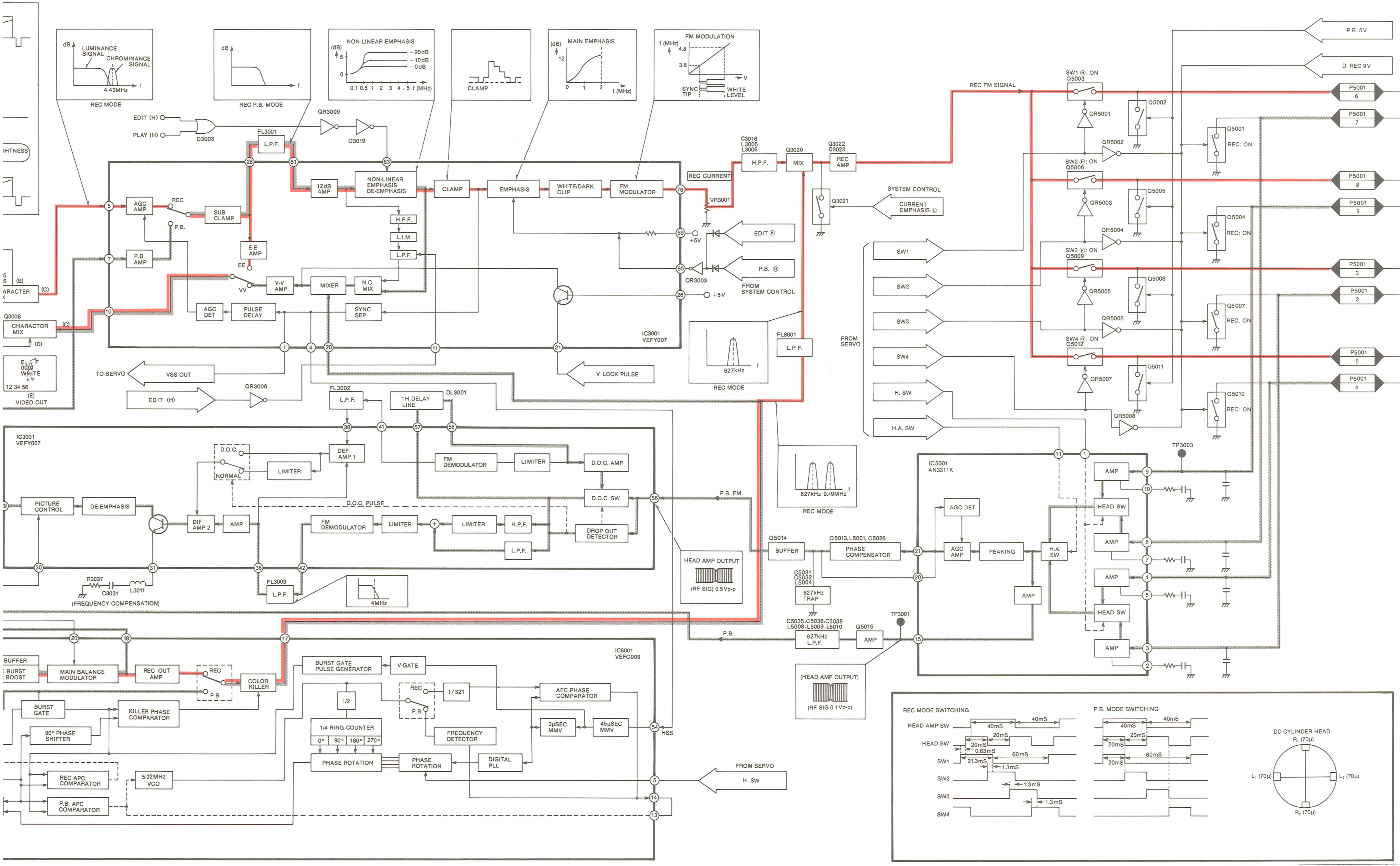

LOADING
P6003
1
LOADING MOTOR
M
P6003
2
UNLOADING
A)
P13
2
CASSETTE DOWN SWITCH
B)
P6 12
19
P6301
19
P6302
1
SAFETY TAB SWITCH
P6010
1
AUDIO MUTE Ⓗ
Q6008, QR6008
DEW DETECTOR
P6008
4
DEW SENSOR
REEL SENSOR
+5V
P6008
3
P6008
1
P6009
1
TAKE-UP PHOTO
Q6010
P6007
1
SUPPLY PHOTO
SENSOR LED DRIVE
Q6006
QR6005
QR6006
P6005
1
SENSOR LED
IC6004
RESET
+5V
C)
D)
E)
F)
G)
H)
I)
J)
K)
V-SYNC
DA0
DA1
DA2
DA3
DA4
DA5
DA6
LDI
ADM
IC6002 MN1237A
H-SYNC
OSC 2
OSC 1
D01
D00
VOW
VR6001
OSC ADJ
QR6002
NON REC DATA SW Ⓛ/ON
QR6001
REC DATA SW Ⓛ/ON
EVF CIRCUIT
IC901
V-SYNC
H-SYNC
VIDEO IN
CHARACTER MIX CIRCUIT IN LUMINANCE CHROMINANCE
HEAD
VOW
D00
D01
REC DATA
NON REC DATA
EJECT KEY
FF/REW KEY
STOP KEY
0
0.2
0.4
0.6
0.8
1
(SEC)
LOAD Ⓗ
UNLOAD Ⓗ
CAP REV Ⓗ
CAP FOW Ⓛ
V0
V1
S.R/S.F
POS ①
POS ②
POS ③
(REW)
(FF)
PLAY KEY
STOP KEY
0
1
2
3
3.5
4
5
5.5
6
(SEC)
AUDIO MUTE Ⓗ
V-EE Ⓗ
CYL ON Ⓗ
LD1
IC6001-2
DATA 0
DATA 6
DISPLAY POSITION DATA
COUNTER DATA
ABNORMAL CONDITION DISPLAY DATA
E----F DATA
DISPLAY POSITION DATA
DATE CHARACTER DATA
CURSOR MOVING DATA
NON REC DATA
REC DATA
E ---- F
○○○○
"DEW"
85 7 23

## 3-7. SERVO BLOCK DIAGRAM


FROM VIDEO
VSS
Q2001
IC2001 MN6179VBES
REC
PB
COUNT DOWN CLOCK
CYL DIGITAL PHASE LOOP
X-TAL OSC
3.58MHz
TP2003
V0
V1
L
H
STILL
NORMAL
UNLOAD
FF/REW CUE/REV
MODE INSTRUCTION DECORDER
EX. PB Ⓗ
D. REC Ⓗ
REV Ⓗ / STOP Ⓜ / FWD Ⓛ
FROM SYSTEM CONTROL
CYL DIGITAL SPEED LOOP
CTL PULSE GENERATOR
CAP DIGITAL PHASE LOOP
CAP DIGITAL SPEED LOOP
TP2014
TP2004
TP2015
TRACKING FIX
TRACKING VOLUME
VR2002
VR2003
+5V
LPF
R2003 C2004
R2004 C2005
TRACKING MMV
REC CTL AMP
PB CTL AMP
AMP
FG AMP
CTL HEAD
P2003
TP2002
CAPSTAN FG HEAD
P2002
Q2006
IC2006
IC 2002 AN3796S
CYL ON Ⓗ
CYL LOCK
TO SYSTEM CONTROL
NORMAL 2.5V
SPEED UP → VOLTAGE UP
SPEED DOWN → VOLTAGE DOWN
R2008,C2009
R2009,C2008
L.P.F.
TORQUE CONTROL
DRIVE TRANSISTOR
DIFFERENTIAL AMP/POSITION SIGNAL PROCE
IC2004 TA8402F
CYL. ON Ⓗ
Q2004
Q2002
Q2003
TO POWER
CYL.F.B
CYL POWER
M1
M2
M3
P2001
DD CYLINDER MOTOR
PG HEAD
FG HEAD
HALL ICA
HALL ICB
HALL ICC
TP2001
25Hz
FG
H. SW
PG
CYL PG
CYL FG
SWITCHING PULSE GENERATOR
HEAD AMP SW
SW4
SW3
SW2
SW1
TO HEAD AMP
VR2001
PG SHIFT
VCC
IC2003 µPC1542AG
EE Ⓗ
TO POWER
CAP F.B
FROM POWER
CAP. POWER
IC2005 ①③㉓
TORQUE CONTROL
DIFFERENTIAL AMP
MOTOR ROTATION DETECTION
POSITION SIGNAL PROCESS
REV Ⓗ/STOP Ⓜ/FWD Ⓛ
IC2005 BA6430S
TO CAP HALL IC
HALL IC3
HALL IC2
HALL IC1
DD CAPSTAN MOTOR
REC MODE SWITCHING
IC200 −11 HEAD AMP SW
−16 HEAD SW
−15 SW1
−14 SW2
−13 SW3
−12 SW4
40mS
20mS
0.63mS
21.3mS
60mS
1.3mS
P.B MODE SWITCHING
CYLINDER SERVO PHASE LOOP
CYLINDER SERVO SPEED LOOP
CAPSTAN SERVO PHASE LOOP
CAPSTAN SERVO SPEED LOOP

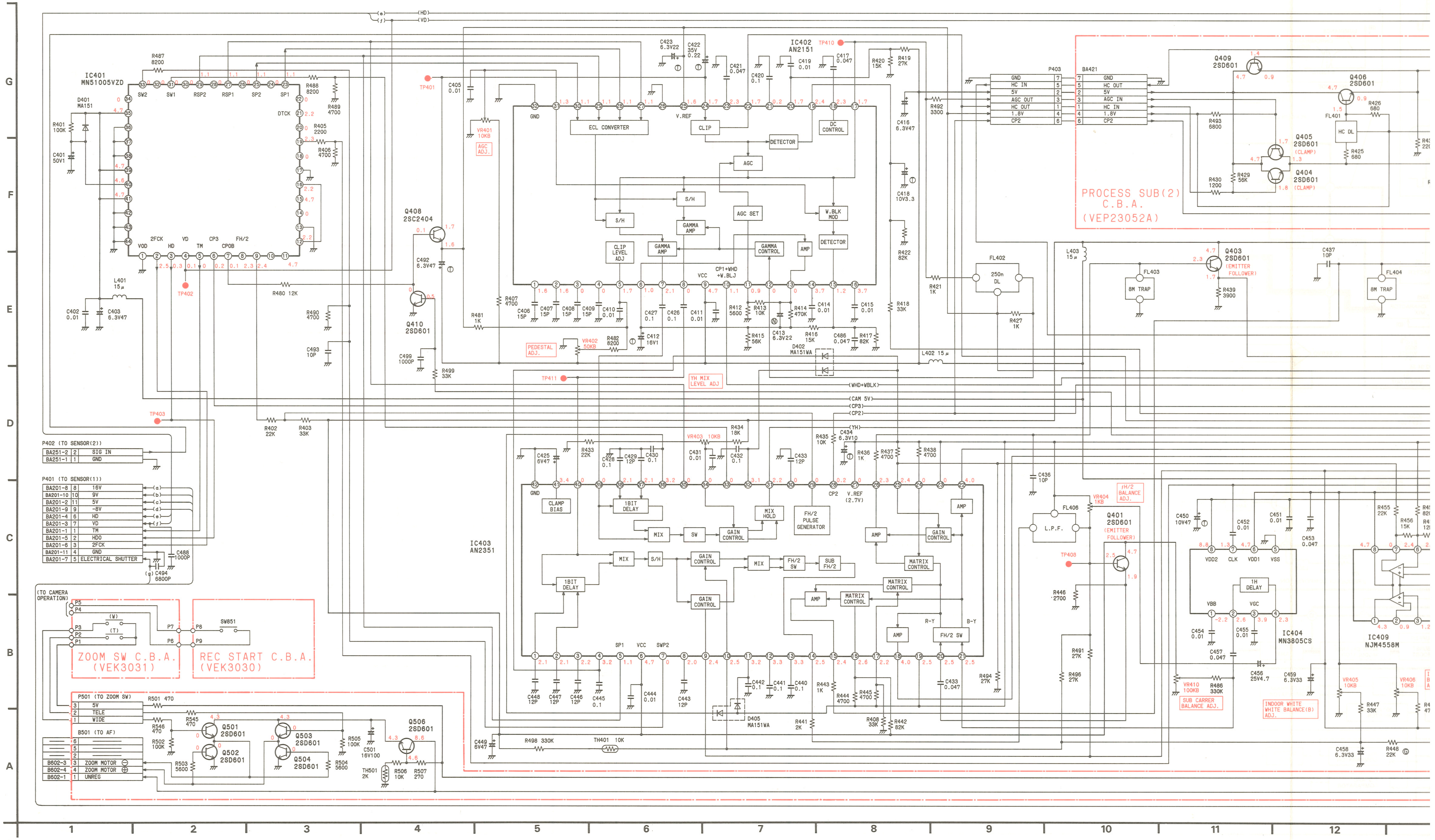
## 3-8. LUMINANCE & CHROMINANCE BLOCK DIAGRAM

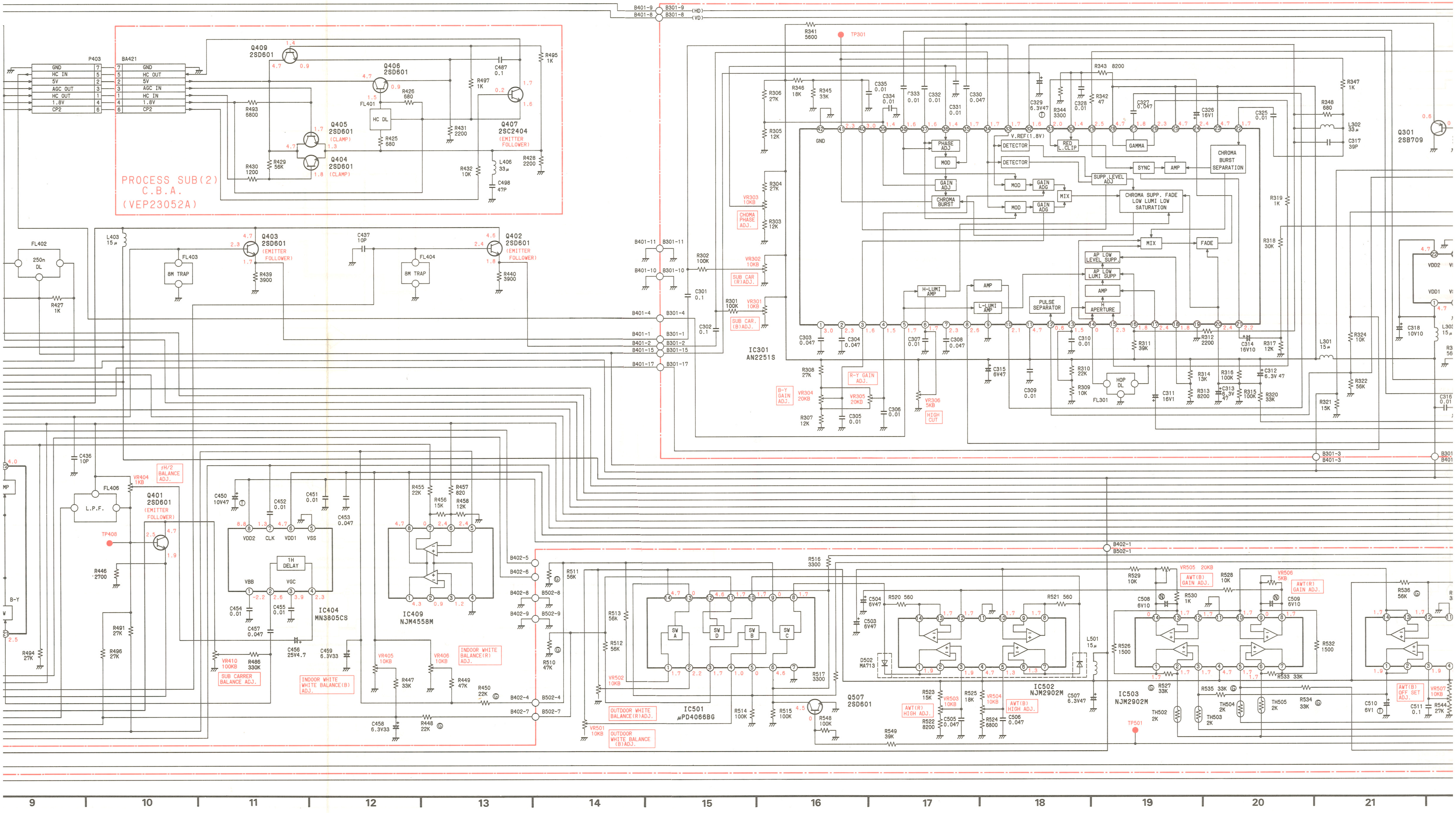

VIDEO SIGNAL
(A)
CHARACTER SIGNAL (REC DATA)
12 34 56
(B)
CHARACTER BRIGHTNESS IS KEPT 80%
RECORDED PICTURE
(C)
dB
LUMINANCE SIGNAL
CHROMINANCE SIGNAL
4.43MHz
f
REC MODE
REC P.B. MODE
NON-LINEAR EMPHASIS
(dB)
-20dB
-10dB
-0dB
0.1 0.5 1 2 3 4 5 f (MHz)
CLAMP
MAIN EMPHASIS
12
f (MHz)
FM MODULATION
f (MHz)
4.8
3.8
SYNC TIP
WHITE LEVEL
V
EDIT (H)
PLAY (H)
D3003
QR3009
Q3019
FL3001
L.P.F.
REC DATA
FROM SYSTEM CONTROL
NON REC DATA
Q3016
BUFFER
CAMERA VIDEO
Q3005
Q3006
CHARACTER MIX
Q3024
AMP
Q3008
CHARACTOR MIX
(D)
(E)
AGC AMP
REC
P.B.
SUB CLAMP
P.B. AMP
E-E AMP
EE
VV
V-V AMP
MIXER
N.C. MIX
AGC DET
PULSE DELAY
SYNC SEP
12dB AMP
NON-LINEAR EMPHASIS DE-EMPHASIS
H.P.F.
L.I.M.
L.P.F.
CLAMP
EMPHASIS
WHITE/DARK CLIP
FM MODULATOR
IC3001
VEFY007
REC CURRENT
VR3001
C3016
L3005
L3006
H.P.F.
Q3020
MIX
Q3022
Q3023
REC AMP
Q3021
SYSTEM CONTROL
CURRENT EMPHASIS Ⓛ
EDIT Ⓗ
P.B. Ⓗ
FROM SYSTEM CONTROL
+5V
QR3003
RECORDED PICTURE
CHARACTER SIGNAL (NON-REC DATA)
E····F
0001
WHITE
VIDEO OUT
TO SERVO
VSS OUT
EDIT (H)
QR3006
V LOCK PULSE
627kHz
REC MODE
FL8001
FROM SERVO
SW1
SW2
SW3
SW4
H. SW
H.A. SW
FL3002
1H DELAY LINE
DL3001
IC3001
VEFY007
D.O.C.
NORMAL
LIMITER
DEF AMP 1
FM DEMODULATOR
D.O.C. AMP
D.O.C. SW
D.O.C. PULSE
PICTURE CONTROL
DE-EMPHASIS
DIF AMP 2
AMP
FM DEMODULATOR
LIMITER
LIMITER
H.P.F.
L.P.F.
DROP OUT DETECTOR
P.B. FM
627kHz 9.49MHz
IC5001
AN3311K
AGC DET
AGC AMP
Q5014
BUFFER
Q5013, L5001, C5026
PHASE COMPENSATOR
C5031
C5032
L5004
627kHz TRAP
C5035·C5036·C5038
L5008·L5009·L5010
627kHz L.P.F.
Q5015
AMP
TP3001
HEAD AMP OUTPUT
(RF SIG) 0.5Vp-p
(HEAD AMP OUTPUT)
(RF SIG 0.1Vp-p)
TP3002
VIDEO OUT
P3001
EVF OUT
P3002
MAIN SIGNAL PATH IN REC MODE
MAIN SIGNAL PATH IN PLAYBACK MODE
P.B. 5V
R3037
C3031
L3011
(FREQUENCY COMPENSATION)
FL3003
L.P.F.
4MHz
DL8001
COMB FILTER
IC8001
VEFC009
P.B. BUFFER
REC BURST 6dB BOOST
MAIN BALANCE MODULATOR
REC OUT AMP
COLOR KILLER
BURST GATE PULSE GENERATOR
V-GATE
ACC
ACC DETECTOR
BURST GATE
KILLER PHASE COMPARATOR
90° PHASE SHIFTER
BURST 6dB ATT
1/2
1/4 RING COUNTER
0° 90° 180° 270°
PHASE ROTATION
PHASE ROTATION
DIGITAL PLL
1/321
AFC PHASE COMPARATOR
FREQUENCY DETECTOR
3μSEC MMV
45μSEC MMV
HSS
FL8003
4.43MHz B.P.F.
AMP
BUFFER
XTAL VCO
REC APC COMPARATOR
5.02MHz VCO
P.B. APC COMPARATOR
SUB BALANCE MODULATOR
FL8002
5.06MHz B.P.F.
OSC 4.43MHz
X8001
TP8001
FROM SERVO
H. SW
P.B.
REC MODE SWITCHING
HEAD AMP SW
HEAD SW
SW1
SW2
SW3
SW4

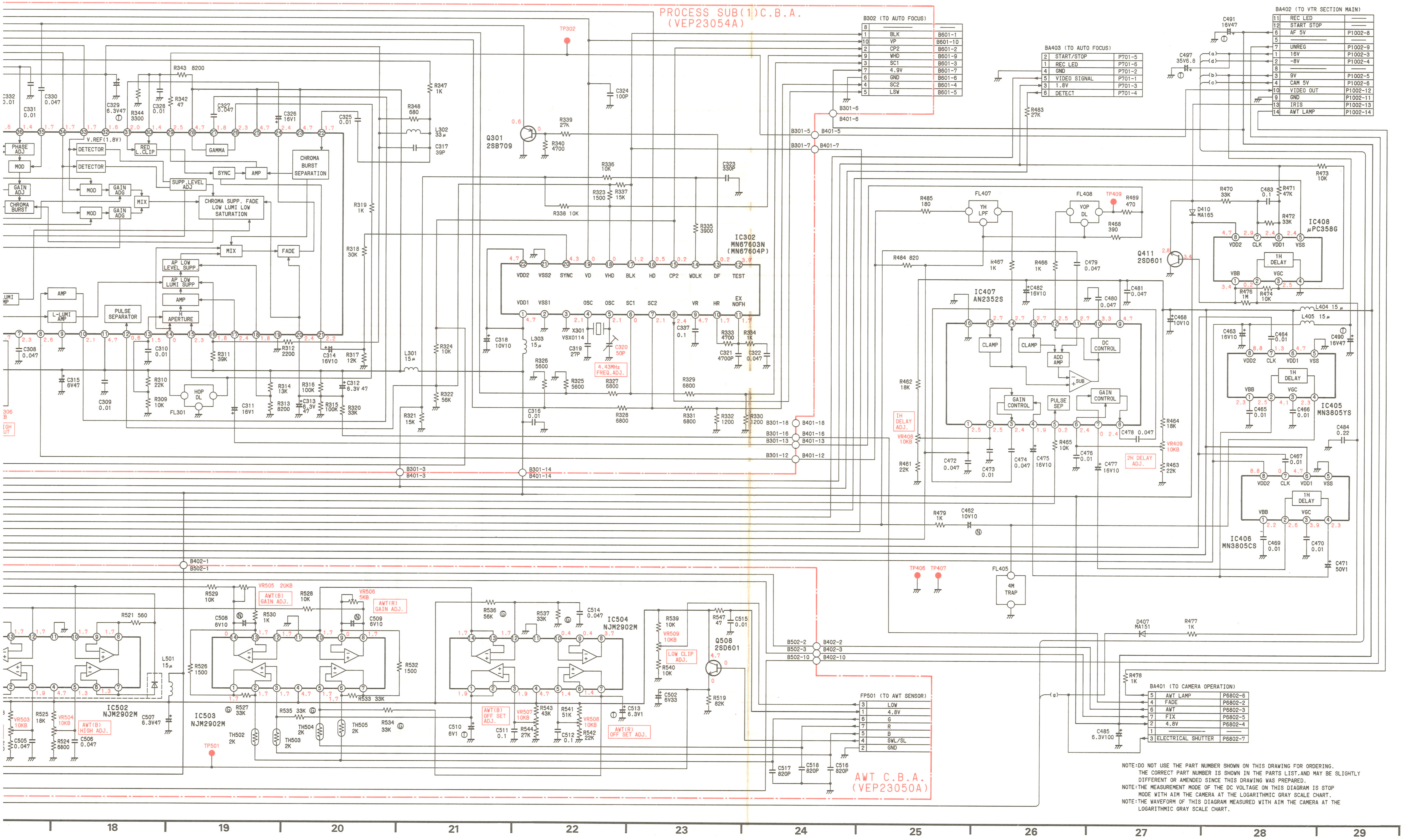

LUMINANCE SIGNAL
CHROMINANCE SIGNAL
4.43MHz
REC MODE
REC P.B. MODE
NON-LINEAR EMPHASIS
−20dB
−10dB
−0dB
0.1 0.5 1 2 3 4 5 f (MHz)
CLAMP
MAIN EMPHASIS
FM MODULATION
SYNC TIP
WHITE LEVEL
EDIT (H)
PLAY (H)
D3003
QR3009
Q3019
FL3001
L.P.F.
AGC AMP
REC
P.B.
SUB CLAMP
P.B. AMP
E-E AMP
EE
VV
V-V AMP
MIXER
N.C. MIX
AGC DET
PULSE DELAY
SYNC SEP
12dB AMP
NON-LINEAR EMPHASIS DE-EMPHASIS
H.P.F.
L.I.M.
EMPHASIS
WHITE/DARK CLIP
FM MODULATOR
REC CURRENT
VR3001
EDIT Ⓗ
P.B. Ⓗ
FROM SYSTEM CONTROL
QR3003
+5V
IC3001 VEFY007
ARACTER
Q3008
CHARACTOR MIX
VIDEO OUT
WHITE
TO SERVO
VSS OUT
EDIT (H)
QR3006
V LOCK PULSE
627kHz
C3016 L3005 L3006
Q3020
MIX
Q3022 Q3023
REC AMP
Q3021
SYSTEM CONTROL
CURRENT EMPHASIS Ⓛ
FL8001
REC FM SIGNAL
P.B. 5V
D. REC 9V
SW1 Ⓗ: ON Q5003
QR5001
Q5002
QR5002
Q5001
REC: ON
SW2 Ⓗ: ON Q5006
QR5003
Q5005
QR5004
Q5004
SW3 Ⓗ: ON Q5009
QR5005
Q5008
QR5006
Q5007
SW4 Ⓗ: ON Q5012
QR5007
Q5011
QR5008
Q5010
P5001
R1
L1
R2
L2
SW1
SW2
SW3
SW4
H. SW
H.A. SW
FROM SERVO
FL3002
1H DELAY LINE
DL3001
DEF AMP 1
D.O.C.
NORMAL
LIMITER
FM DEMODULATOR
D.O.C. AMP
D.O.C. SW
D.O.C. PULSE
PICTURE CONTROL
DE-EMPHASIS
DIF AMP 2
AMP
DROP OUT DETECTOR
P.B. FM
R3037
C3031
L3011
(FREQUENCY COMPENSATION)
FL3003
4MHz
HEAD AMP OUTPUT
(RF SIG) 0.5Vp-p
627kHz 9.49MHz
Q5014
BUFFER
Q5013, L5001, C5026
PHASE COMPENSATOR
C5031 C5032 L5004
627kHz TRAP
C5035, C5036, C5038 L5008, L5009, L5010
627kHz L.P.F.
Q5015
TP3001
TP3003
(HEAD AMP OUTPUT)
(RF SIG 0.1Vp-p)
IC5001 AN3311K
AGC DET
PEAKING
H.A. SW
HEAD SW
IC8001 VEFC009
BUFFER
BURST BOOST
MAIN BALANCE MODULATOR
REC OUT AMP
COLOR KILLER
BURST GATE PULSE GENERATOR
V-GATE
BURST GATE
KILLER PHASE COMPARATOR
90° PHASE SHIFTER
1/2
1/321
AFC PHASE COMPARATOR
1/4 RING COUNTER
0° 90° 180° 270°
FREQUENCY DETECTOR
3μSEC MMV
45μSEC MMV
HSS
PHASE ROTATION
DIGITAL PLL
REC APC COMPARATOR
5.02MHz VCO
P.B. APC COMPARATOR
FROM SERVO
H. SW
REC MODE SWITCHING
HEAD AMP SW
40mS
20mS
0.63mS
60mS
21.3mS
1.3mS
P.B. MODE SWITCHING
DD-CYLINDER HEAD
R1 (70μ)
L1 (70μ)
L2 (70μ)
R2 (70μ)

Next Page:
PROCESS, PROCESS (1) · (2) & AWT Section

## 3-9. PROCESS, PROCESS SUB (1) · (2) & AWT SCHEMATIC DIAGRAM


G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
IC401
MN51005VZD
D401
MA151
R401
100K
C401
50V1
R487
8200
R488
8200
R489
4700
R405
2200
R406
4700
SW2
SW1
RSP2
RSP1
SP2
SP1
DTCK
2FCK
VD
CP3
FH/2
VDD
HD
TM
CPOB
L401
15μ
C402
0.01
C403
6.3V47
TP402
TP401
R480 12K
R490
4700
C493
10P
Q408
2SC2404
C492
6.3V47
Q410
2SD601
C499
1000P
R499
33K
C405
0.01
VR401
10KB
AGC
ADJ.
R481
1K
R407
4700
C406
15P
C407
15P
C408
15P
C409
15P
C410
0.01
PEDESTAL
ADJ.
VR402
50KB
R482
8200
C412
16V1
C427
0.1
C426
0.1
C411
0.01
C423
6.3V22
C422
35V
0.22
C421
0.047
C420
0.1
C419
0.01
C417
0.047
IC402
AN2151
TP410
R420
15K
R419
27K
GND
V.REF
ECL CONVERTER
CLIP
DETECTOR
DC
CONTROL
AGC
S/H
AGC SET
W.BLK
MOD
GAMMA
AMP
CLIP
LEVEL
ADJ
GAMMA
CONTROL
AMP
DETECTOR
CP1+WHD
+W.BLJ
VCC
R412
5600
R413
10K
R414
470K
C414
0.01
C415
0.01
R415
56K
C413
6.3V22
R416
15K
C486
0.047
R417
82K
D402
MA151WA
R418
33K
R422
82K
C416
6.3V47
C418
10V3.3
R492
3300
P403
BA421
GND
HC IN
HC OUT
5V
AGC OUT
AGC IN
1.8V
CP2
Q409
2SD601
Q406
2SD601
R426
680
FL401
HC DL
R493
6800
Q405
2SD601
(CLAMP)
Q404
2SD601
(CLAMP)
R425
680
R429
56K
R430
1200
PROCESS SUB(2)
C.B.A.
(VEP23052A)
FL402
250n
DL
R421
1K
R427
1K
L403
15μ
FL403
8M TRAP
Q403
2SD601
(EMITTER
FOLLOWER)
R439
3900
C437
10P
FL404
8M TRAP
L402 15μ
TP411
YH MIX
LEVEL ADJ
(WHD+WBLK)
(CAM 5V)
(CP3)
(CP2)
(YH)
TP403
R402
22K
R403
33K
P402 (TO SENSOR(2))
BA251-2
SIG IN
BA251-1
GND
P401 (TO SENSOR(1))
BA201-8
16V
BA201-10
9V
BA201-2
5V
BA201-9
-8V
BA201-4
HD
BA201-3
VD
BA201-1
TM
BA201-5
HDO
BA201-6
2FCK
BA201-11
GND
BA201-7
ELECTRICAL SHUTTER
C488
1000P
C494
6800P
VR403 10KB
R434
18K
R435
10K
C434
6.3V10
R436
1K
R437
4700
R438
4700
C425
6V47
R433
22K
C428
0.1
C429
12P
C430
0.1
C431
0.01
C432
0.1
C433
12P
IC403
AN2351
CLAMP
BIAS
1BIT
DELAY
MIX
SW
GAIN
CONTROL
MIX
HOLD
FH/2
PULSE
GENERATOR
CP2
V.REF
(2.7V)
AMP
FH/2
SW
SUB
FH/2
MATRIX
CONTROL
R-Y
B-Y
FH/2 SW
SP1
VCC
SWP2
C448
12P
C447
12P
C446
12P
C445
0.1
C444
0.01
C443
12P
C442
0.1
C441
0.1
C440
0.1
R443
1K
R444
4700
R445
4700
C435
0.047
R494
27K
D405
MA151WA
R441
2K
R408
33K
R442
82K
C436
10P
FL406
L.P.F.
VR404
1KB
FH/2
BALANCE
ADJ.
Q401
2SD601
(EMITTER
FOLLOWER)
TP405
R446
2700
R491
27K
R496
27K
C450
10V47
C452
0.01
C451
0.01
C453
0.047
VDD2
CLK
VDD1
VSS
1H
DELAY
VBB
VGC
IC404
MN3805CS
C454
0.01
C455
0.01
C457
0.047
C456
25V4.7
C459
6.3V33
VR410
100KB
R486
330K
SUB CARRER
BALANCE ADJ.
INDOOR WHITE
WHITE BALANCE(B)
ADJ.
R455
22K
R456
15K
IC409
NJM4558M
VR405
10KB
VR406
10KB
R447
33K
C458
6.3V33
R448
22K
(TO CAMERA
OPERATION)
ZOOM SW C.B.A.
(VEK3031)
REC START C.B.A.
(VEK3030)
SW851
(W)
(T)
P501 (TO ZOOM SW)
5V
TELE
WIDE
R501 470
B501 (TO AF)
B602-3
ZOOM MOTOR ⊖
B602-4
ZOOM MOTOR ⊕
B602-1
UNREG
R546
470
R545
470
R502
100K
R503
5600
Q501
2SD601
Q502
2SD601
Q503
2SD601
Q504
2SD601
R504
5600
R505
100K
C501
16V100
Q506
2SD601
TH501
2K
R506
10K
R507
270
C449
6V47
R498 330K
TH401 10K
(HD)
(VD)


PROCESS SUB(2)
C.B.A.
(VEP23052A)
P403
BA421
GND
HC IN
5V
AGC OUT
HC OUT
1.8V
CP2
AGC IN
Q409
2SD601
Q406
2SD601
Q405
2SD601
(CLAMP)
Q404
2SD601
(CLAMP)
Q407
2SC2404
(EMITTER FOLLOWER)
FL401
HC DL
R493 6800
R430 1200
R429 56K
R425 680
R426 680
R431 2200
R432 10K
R497 1K
R495 1K
C487 0.1
L406 33μ
C498 47P
R428 2200
FL402
250n DL
R427 1K
L403 15μ
FL403
8M TRAP
Q403
2SD601
(EMITTER FOLLOWER)
R439 3900
C437 10P
FL404
8M TRAP
Q402
2SD601
(EMITTER FOLLOWER)
R440 3900
B401-9
B301-9
B401-8
B301-8
(HD)
(VD)
B401-11
B301-11
B401-10
B301-10
B401-4
B301-4
B401-1
B301-1
B401-2
B301-2
B401-15
B301-15
B401-17
B301-17
R341 5600
TP301
R302 100K
C301 0.1
R301 100K
C302 0.1
VR303 10KB
CHROMA PHASE ADJ.
VR302 10KB
SUB CAR (R)ADJ.
VR301 10KB
SUB CAR. (B)ADJ.
R306 27K
R305 12K
R304 27K
R303 12K
R346 18K
R345 33K
C335 0.01
C334 0.01
C333 0.01
C332 0.01
C331 0.01
C330 0.047
C329 6.3V47
R344 3300
C328 0.01
R342 47
R343 8200
C327 0.047
C326 16V1
C325 0.01
R347 1K
R348 680
L302 33μ
C317 39P
Q301 2SB709
GND
V.REF(1.8V)
PHASE ADJ
MOD
DETECTOR
RED L.CLIP
GAMMA
SYNC
AMP
CHROMA BURST SEPARATION
GAIN ADJ
CHROMA BURST
GAIN ADG
MIX
SUPP.LEVEL ADJ
CHROMA SUPP. FADE LOW LUMI LOW SATURATION
MIX
FADE
AP LOW LEVEL SUPP.
AP LOW LUMI SUPP
AMP
H APERTURE
H-LUMI AMP
L-LUMI AMP
PULSE SEPARATOR
IC301
AN2251S
R319 1K
R318 30K
C303 0.047
C304 0.047
C307 0.01
C308 0.047
C315 6V47
C309 0.01
C310 0.01
R310 22K
R309 10K
FL301
HOP DL
R311 39K
R312 2200
C311 16V1
R314 13K
R313 8200
R316 100K
C313 6.3V 47
R315 100K
C314 16V10
C312 6.3V 47
R317 12K
R320 33K
R308 27K
R307 12K
B-Y GAIN ADJ.
VR304 20KB
R-Y GAIN ADJ.
VR305 20KB
C305 0.01
C306 0.01
VR306 5KB
HIGH CUT
L301 15μ
R321 15K
R324 10K
R322 56K
C318 10V10
L303 15μ
C316 0.01
VDD2
VDD1
B301-3
B401-3
C436 10P
FL406
L.P.F.
VR404 1KB
fH/2 BALANCE ADJ.
Q401
2SD601
(EMITTER FOLLOWER)
TP408
R446 2700
R491 27K
R496 27K
R494 27K
B-Y
C450 10V47
C452 0.01
C451 0.01
C453 0.047
VDD2
CLK
VDD1
VSS
1H DELAY
VBB
VGC
C454 0.01
C455 0.01
C457 0.047
IC404
MN3805CS
C456 25V4.7
C459 6.3V33
VR410 100KB
R486 330K
SUB CARRER BALANCE ADJ.
INDOOR WHITE BALANCE(B) ADJ.
R455 22K
R457 820
R456 15K
R458 12K
IC409
NJM4558M
VR405 10KB
VR406 10KB
INDOOR WHITE BALANCE(R) ADJ.
R447 33K
R449 47K
R450 22K
C458 6.3V33
R448 22K
B402-5
B402-6
B402-8
B502-8
B402-9
B502-9
B402-4
B502-4
B402-7
B502-7
R511 56K
R510 47K
R513 56K
R512 56K
VR502 10KB
OUTDOOR WHITE BALANCE(R)ADJ.
VR501 10KB
OUTDOOR WHITE BALANCE (B)ADJ.
SW A
SW D
SW B
SW C
IC501
μPD4066BG
R516 3300
R517 3300
R514 100K
R515 100K
Q507
2SD601
R548 100K
R549 39K
C504 6V47
C503 6V47
R520 560
R521 560
D502 MA713
L501 15μ
IC502
NJM2902M
C507 6.3V47
R523 15K
VR503 10KB
AWT(R) HIGH ADJ.
R522 8200
C505 0.047
R525 18K
VR504 10KB
AWT(B) HIGH ADJ.
R524 6800
C506 0.047
B402-1
B502-1
R529 10K
VR505 20KB
AWT(B) GAIN ADJ.
R528 10K
VR506 5KB
AWT(R) GAIN ADJ.
C508 6V10
R530 1K
C509 6V10
R526 1500
R532 1500
IC503
NJM2902M
R527 33K
TP501
TH502 2K
R535 33K
TH504 2K
TH503 2K
TH505 2K
R534 33K
R533 33K
R536 56K
C510 6V1
C511 0.1
AWT(B) OFF SET ADJ.
VR507 10KB
R544 27K
9
10
11
12
13
14
15
16
17
18
19
20
21


PROCESS SUB(1)C.B.A.
(VEP23054A)
AWT C.B.A.
(VEP23050A)
B302 (TO AUTO FOCUS)
8 | —— | ——
1 | BLK | B601-1
10 | VP | B601-10
2 | CP2 | B601-2
9 | WHD | B601-9
3 | SC1 | B601-3
7 | 4.9V | B601-6
6 | GND | B601-6
4 | SC2 | B601-4
5 | LSW | B601-5
BA403 (TO AUTO FOCUS)
2 | START/STOP | P701-5
1 | REC LED | P701-6
4 | GND | P701-2
5 | VIDEO SIGNAL | P701-1
3 | 1.8V | P701-3
6 | DETECT | P701-4
BA402 (TO VTR SECTION MAIN)
11 | REC LED | ——
12 | START STOP | ——
6 | AF 5V | P1002-8
5 | —— | ——
7 | UNREG | P1002-9
1 | 16V | P1002-3
2 | -8V | P1002-4
8 | —— | ——
3 | 9V | P1002-5
4 | CAM 5V | P1002-6
10 | VIDEO OUT | P1002-12
9 | GND | P1002-11
13 | IRIS | P1002-13
14 | AWT LAMP | P1002-14
BA401 (TO CAMERA OPERATION)
5 | AWT LAMP | P6802-6
4 | FADE | P6802-2
6 | AWT | P6802-3
7 | FIX | P6802-5
2 | 4.8V | P6802-4
1 | —— | ——
3 | ELECTRICAL SHUTTER | P6802-7
FP501 (TO AWT SENSOR)
3 | LOW
1 | 4.8V
6 | G
7 | R
5 | B
4 | SWL/SL
2 | GND
IC302
MN67603N
(MN67604P)
IC407
AN2352S
IC408
μPC358G
IC405
MN3805YS
IC406
MN3805CS
IC502
NJM2902M
IC503
NJM2902M
IC504
NJM2902M
Q301
2SB709
Q411
2SD601
Q508
2SD601
FL407
YH LPF
FL408
VOP DL
FL405
4M TRAP
FL301
HOP DL
X301
VSX0114
4.43MHz FREQ.ADJ.
1H DELAY ADJ.
2H DELAY ADJ.
AWT(B) GAIN ADJ.
AWT(R) GAIN ADJ.
AWT(B) OFF SET ADJ.
AWT(R) OFF SET ADJ.
AWT(B) HIGH ADJ.
LOW CLIP ADJ.
PHASE ADJ
MOD
GAIN ADJ
CHROMA BURST
DETECTOR
V.REF(1.8V)
RED L.CLIP
GAMMA
SYNC
AMP
CHROMA BURST SEPARATION
SUPP.LEVEL ADJ
GAIN ADG
MIX
CHROMA SUPP. FADE LOW LUMI LOW SATURATION
FADE
AP LOW LEVEL SUPP
AP LOW LUMI SUPP
H APERTURE
PULSE SEPARATOR
L-LUMI AMP
CLAMP
DC CONTROL
ADD AMP
SUB
GAIN CONTROL
PULSE SEP
1H DELAY
TP302
TP409
TP406
TP407
TP501
18
19
20
21
22
23
24
25
26
27
28
29

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING.
THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST.AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

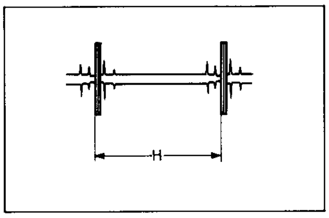
NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

NOTE:THE WAVEFORM OF THIS DIAGRAM MEASURED WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

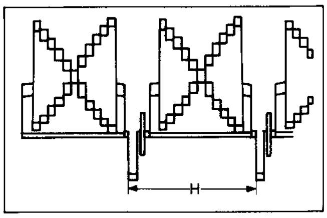
| PROCESS, PROCESS SUB (1), (2) & AWT SCHEMATIC | |
|---|---|
| **Transistor** | |
| Q301 | F-21 |
| Q401 | C-10 |
| Q402 | E-13 |
| Q403 | E-11 |
| Q404 | F-12 |
| Q405 | F-12 |
| Q406 | G-12 |
| Q407 | F-13 |
| Q408 | E-4 |
| Q409 | G-11 |
| Q410 | E-4 |
| Q411 | E-27 |
| Q501 | A-2 |
| Q502 | A-2 |
| Q503 | A-3 |
| Q504 | A-3 |
| Q506 | A-4 |
| Q507 | A-16 |
| Q508 | B-23 |
| **Integrated Circuit** | |
| IC301 | D-16 |
| IC302 | F-23 |
| IC401 | G-1 |
| IC402 | G-7 |
| IC403 | C-4 |
| IC404 | B-12 |
| IC405 | D-29 |
| IC406 | C-28 |
| IC407 | E-26 |
| IC408 | F-28 |
| IC409 | B-12 |
| IC501 | A-15 |
| IC502 | A-18 |
| IC503 | A-19 |
| IC504 | B-22 |
| **Test Point** | |
| TP301 | G-16 |
| TP302 | G-22 |
| TP401 | G-4 |
| TP402 | E-2 |
| TP403 | D-2 |
| TP406 | C-25 |
| TP407 | C-25 |
| TP408 | C-10 |
| TP409 | F-27 |
| TP410 | G-8 |
| TP411 | D-5 |
| TP501 | A-19 |
| **Adjustment** | |
| VR301 | E-15 |
| VR302 | E-15 |
| VR303 | F-15 |
| VR305 | D-16 |
| VR306 | D-17 |
| VR401 | F-5 |
| VR402 | E-6 |
| VR403 | D-6 |
| VR404 | C-10 |
| VR405 | B-12 |
| VR406 | B-13 |
| VR408 | D-25 |
| VR409 | D-27 |
| VR410 | B-11 |
| VR501 | A-14 |
| VR502 | A-14 |
| VR503 | A-17 |
| VR504 | A-18 |
| VR505 | B-19 |
| VR506 | B-20 |
| VR507 | A-22 |
| VR508 | A-22 |
| VR509 | B-23 |
| C320 | E-22 |
| **Connector** | |
| P401 | C-1 |
| P402 | D-1 |
| P403 | G-10 |
| P501 | B-1 |
| B302 | G-25 |
| B501 | A-1 |
| BA401 | A-27 |
| BA402 | G-28 |
| BA403 | G-26 |
| BA421 | G-10 |
| FP501 | B-25 |

ADDRESS INFORMATION

## PROCESS SUB (1) CIRCUIT TP (Test Point) WAVE FORM (REF No. 300 Series)

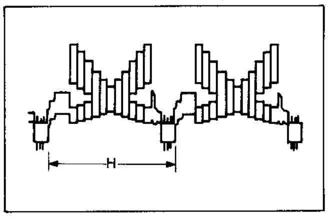


TP301 STOP
0.5V/20µsec. div. 0.5Vp-p

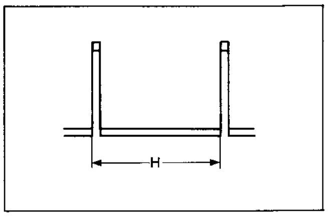


TP302 STOP
0.5V/20µsec. div. 2.2Vp-p

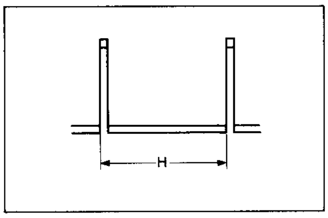
## PROCESS CIRCUIT TP (Test Point) WAVE FORM (REF No. 400 Series)



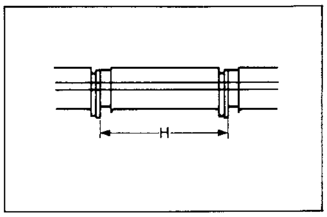
TP401 STOP
0.2V/20µsec. div. 0.6Vp-p



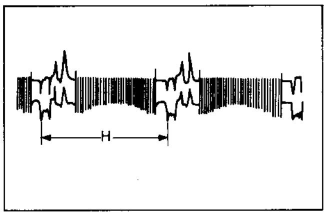
TP402 STOP
2V/5msec. div. 5Vp-p



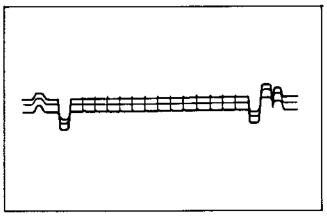
TP403 STOP
2V/20µsec. div. 5Vp-p



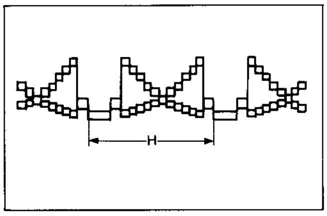
TP407 STOP
50mV/20µsec. div. 0.8Vp-p



TP408 STOP
50mV/20µsec. div. 0.1Vp-p

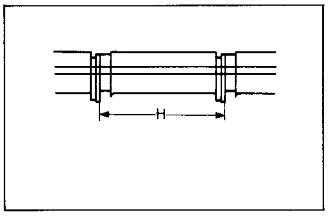


TP409 STOP
0.1V/0.2msec. div. 0.2Vp-p



TP410 STOP
0.2V/20µsec. div. 0.6Vp-p

## A.W.T. CIRCUIT TP (Test Point) WAVE FORM (REF No. 500 Series)



TP501 STOP
50mV/20µsec. div. 50mVp-p

## PROCESS, PROCESS SUB (1) · (2) & AWT ICs VOLTAGE CHART

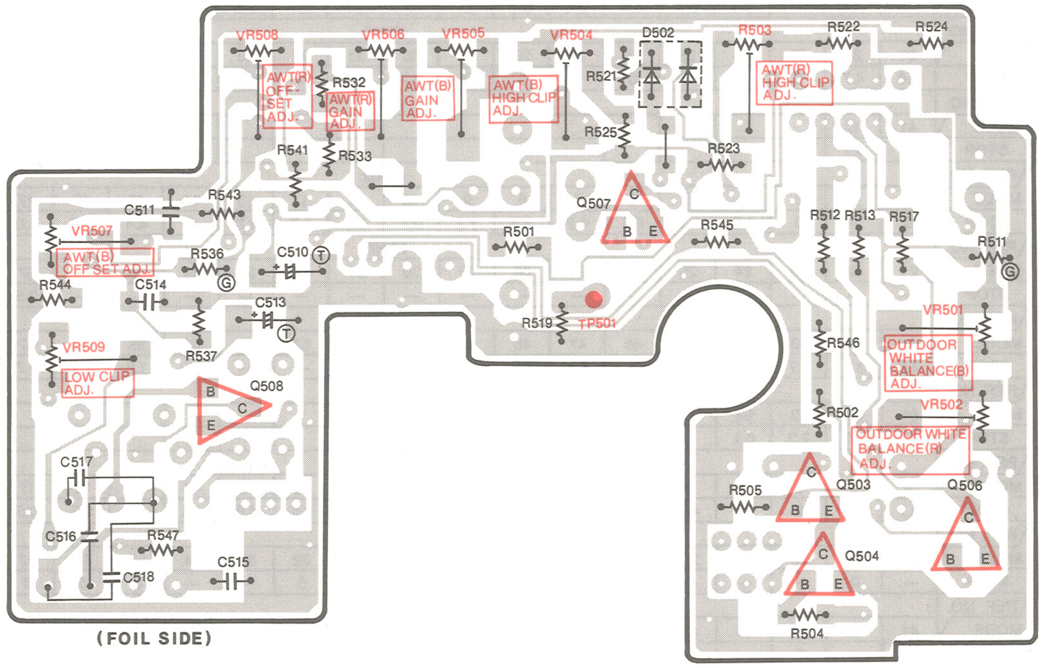
| REF. NO. | IC301 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| STOP | 3.0 | 2.3 | 1.6 | 1.5 | 1.7 | 1.7 | 2.3 | 2.6 | 0 | 2.1 | 4.7 | 0.6 | 1.5 | 0 | 2.3 | 1.8 | 2.4 | 1.8 | 0 | 2.4 |
| REF. NO. | IC301 | | | | | | | | | | | | | | | | | | | |
| MODE | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| STOP | 2.2 | 1.7 | 4.7 | 2.4 | 4.7 | 2.3 | 1.8 | 4.7 | 2.5 | 1.4 | 2.0 | 1.6 | 1.7 | 1.7 | 1.7 | 1.4 | 1.6 | 1.6 | 1.4 | 3.0 |
| REF. NO. | IC301 | | | | | | | | | | | | | | | | | | | |
| MODE | 41 | 42 | | | | | | | | | | | | | | | | | | |
| STOP | 2.3 | 0 | | | | | | | | | | | | | | | | | | |
| REF. NO. | IC302 | | | | | | | | | | | | | | | | | | | |
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| STOP | 4.7 | 0 | 0 | 2.1 | 2.1 | 0 | 2.1 | 2.4 | 4.7 | 1.7 | 1.7 | 3.9 | 0.2 | — | 0.2 | 0.5 | 1.2 | 0 | 0 | 4.3 |
| REF. NO. | IC302 | | | | | | | | | | | | | | | | | | | |
| MODE | 21 | 22 | | | | | | | | | | | | | | | | | | |
| STOP | 0 | 4.7 | | | | | | | | | | | | | | | | | | |
| REF. NO. | IC401 | | | | | | | | | | | | | | | | | | | |
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| STOP | 0 | 2.5 | 0.3 | 0.1 | 0 | 0.2 | 0.1 | 2.3 | 2.4 | — | 4.7 | 2.2 | 0 | 0 | 4.7 | 2.2 | 0 | 0 | 2.3 | 0 |
| REF. NO. | IC401 | | | | | | | | | | | | | | | | | | | |
| MODE | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| STOP | 2.2 | 0 | 1.1 | 0 | 1.1 | 0 | 1.1 | 0 | 1.1 | 0 | 0 | 0 | 0 | 0 | 4.7 | 0 | 0 | 0 | 4.7 | 4.6 |
| REF. NO. | IC401 | | | | | | | | | | | | | | | | | | | |
| MODE | 41 | 42 | 43 | 44 | | | | | | | | | | | | | | | | |
| STOP | 4.7 | 0 | 0 | 0 | | | | | | | | | | | | | | | | |
| REF. NO. | IC402 | | | | | | | | | | | | | | | | | | | |
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| STOP | 1.6 | 1.6 | 0 | 0 | 1.7 | 1.0 | 2.1 | 0 | 4.7 | 1.1 | 0.9 | 0 | 0 | 3.7 | 1.2 | 3.7 | 1.7 | 2.3 | 2.4 | 1.7 |
| REF. NO. | IC402 | | | | | | | | | | | | | | | | | | | |
| MODE | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | | | | | | | | |
| STOP | 0.2 | 1.7 | 2.3 | 1.7 | 1.6 | 0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.3 | 0 | | | | | | | | |
| REF. NO. | IC403 | | | | | | | | | | | | | | | | | | | |
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| STOP | 2.1 | 2.1 | 2.2 | 3.2 | 1.1 | 4.7 | 0 | 2.0 | 2.4 | 2.5 | 3.2 | 3.3 | 3.3 | 2.5 | 2.4 | 2.6 | 2.2 | 4.0 | 2.5 | 2.5 |
| REF. NO. | IC403 | | | | | | | | | | | | | | | | | | | |
| MODE | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| STOP | 2.5 | 4.0 | 0 | 0 | 2.4 | 2.3 | 0 | 0.2 | 0 | 0 | 2.2 | 3.1 | 0 | 0 | 0 | 3.2 | 2.1 | 2.1 | 0 | 0 |
| REF. NO. | IC403 | | | | | | | | | | IC404 | | | | | | | | | |
| MODE | 41 | 42 | | | | | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | |
| STOP | 3.4 | 0 | | | | | | | | | −2.2 | 2.6 | 3.9 | 2.3 | 0 | 4.7 | 1.3 | 8.8 | | |
| REF. NO. | IC405 | | | | | | | | | | IC406 | | | | | | | | | |
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | |
| STOP | 2.3 | 2.5 | 4.1 | 2.3 | 0 | 4.6 | 1.3 | 8.6 | | | 2.2 | 2.6 | 3.9 | 2.3 | 0 | 0 | 0 | 8.8 | | |
| REF. NO. | IC407 | | | | | | | | | | | | | | | | | | | |
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | | | | |
| STOP | 2.5 | 2.5 | 2.4 | 1.9 | 0.2 | 2.4 | 0 | 2.4 | 4.7 | 3.3 | 2.7 | 2.5 | 2.7 | 2.7 | 2.7 | 0 | | | | |
| REF. NO. | IC408 | | | | | | | | | | IC409 | | | | | | | | | |
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | |
| STOP | 3.4 | 0.2 | 2.5 | 0 | 2.4 | 2.4 | 2.9 | 4.7 | | | 4.3 | 0.9 | 1.2 | 0 | 2.4 | 2.4 | 0 | 4.7 | | |
| REF. NO. | IC501 | | | | | | | | | | | | | | | | | | | |
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | | | | | | |
| STOP | 1.7 | 2.2 | 1.7 | 1.0 | 0 | 4.6 | 0 | 1.7 | 0 | 1.7 | 1.7 | 4.6 | 0 | 4.7 | | | | | | |
| REF. NO. | IC502 | | | | | | | | | | | | | | | | | | | |
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | | | | | | |
| STOP | 1.9 | 1.9 | 1.9 | 4.7 | 1.3 | 1.3 | 1.3 | 1.7 | 1.7 | 1.7 | 0 | 1.7 | 1.7 | 1.7 | | | | | | |
| REF. NO. | IC503 | | | | | | | | | | | | | | | | | | | |
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | | | | | | |
| STOP | 1.7 | 1.7 | 1.7 | 4.7 | 1.7 | 1.7 | — | 1.7 | 0 | 1.7 | 0 | 0 | 1.7 | 0 | | | | | | |
| REF. NO. | IC504 | | | | | | | | | | | | | | | | | | | |
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | | | | | | |
| STOP | 1.9 | 1.9 | 1.9 | 4.7 | 1.4 | 1.4 | 1.4 | 3.7 | 0.4 | 0.4 | 0 | 1.7 | 0 | 1.7 | | | | | | |

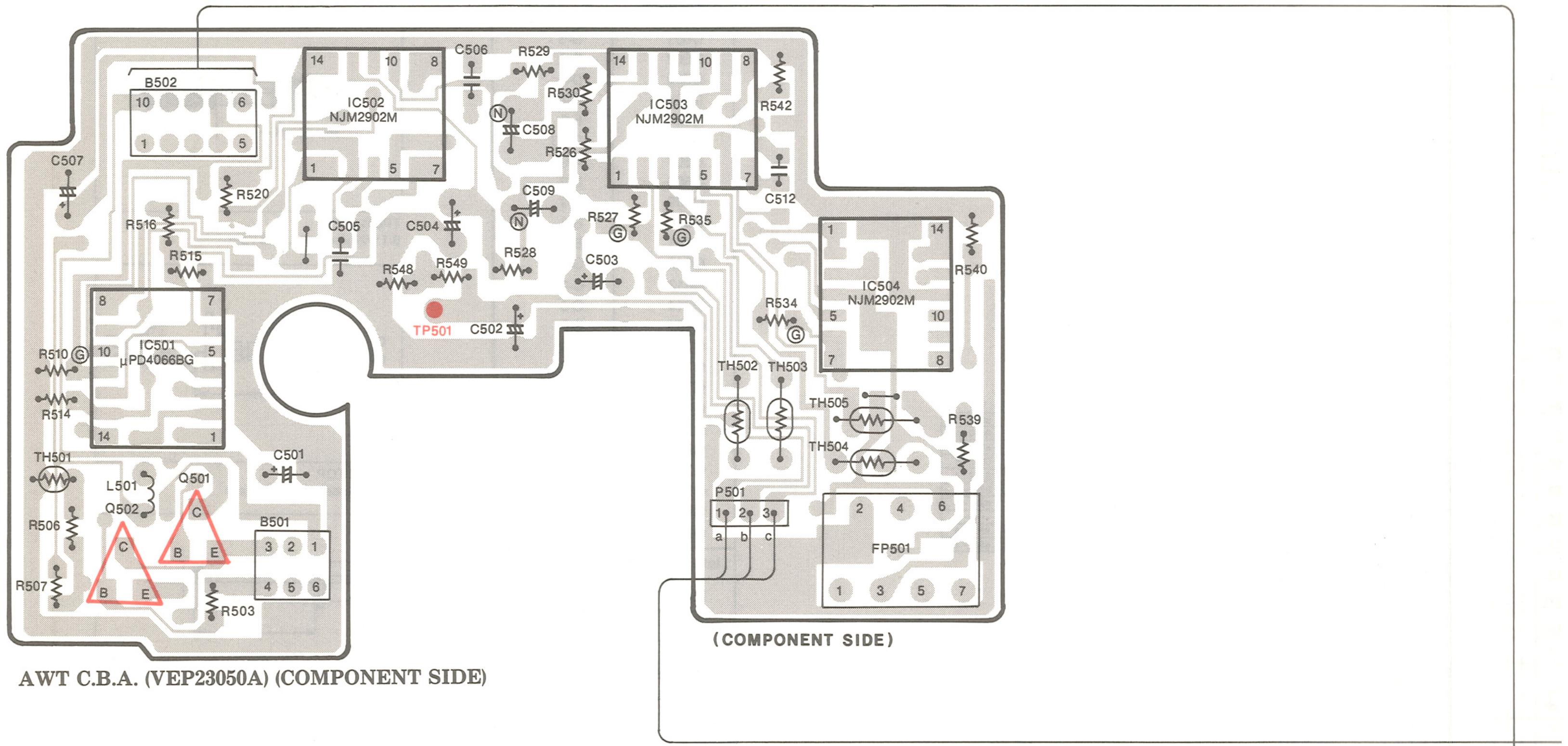
## PROCESS, PROCESS SUB (1) · (2) & AWT TRs VOLTAGE CHART

| REF. NO. | Q301 | | | Q401 | | | Q402 | | | Q403 | | | Q404 | | | Q405 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B |
| STOP | 0.6 | 0 | 0 | 1.9 | 4.7 | 2.5 | 1.8 | 4.6 | 2.4 | 1.7 | 4.7 | 2.3 | 1.3 | 4.7 | 1.8 | 1.3 | 4.7 | 1.7 |
| REF. NO. | Q406 | | | Q407 | | | Q408 | | | Q409 | | | Q410 | | | Q411 | | |
| MODE | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B |
| STOP | 0.9 | 4.7 | 1.5 | 1.6 | 1.7 | 0.2 | 1.6 | 1.7 | 0.1 | 0.9 | 4.7 | 1.4 | 0 | 0 | 0.5 | 2.8 | 0 | 3.4 |
| REF. NO. | Q501 | | | Q502 | | | Q503 | | | Q504 | | | Q506 | | | Q507 | | |
| MODE | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B |
| STOP | 0 | 4.3 | 0 | 0 | 0 | 0 | 0 | 4.3 | 0 | 0 | 0 | 0 | 4.3 | 8.6 | 4.6 | 0 | 4.5 | 0 |
| REF. NO. | Q508 | | | | | | | | | | | | | | | | | |
| MODE | E | C | B | | | | | | | | | | | | | | | |
| STOP | 0 | 4.7 | 0 | | | | | | | | | | | | | | | |

## 3-10. PROCESS (VEP23053B), PROCESS SUB (1) (VEP23054A), PROCESS SUB (2) (VEP23052A) & AWT (VEP23050A) CIRCUIT BOARDS

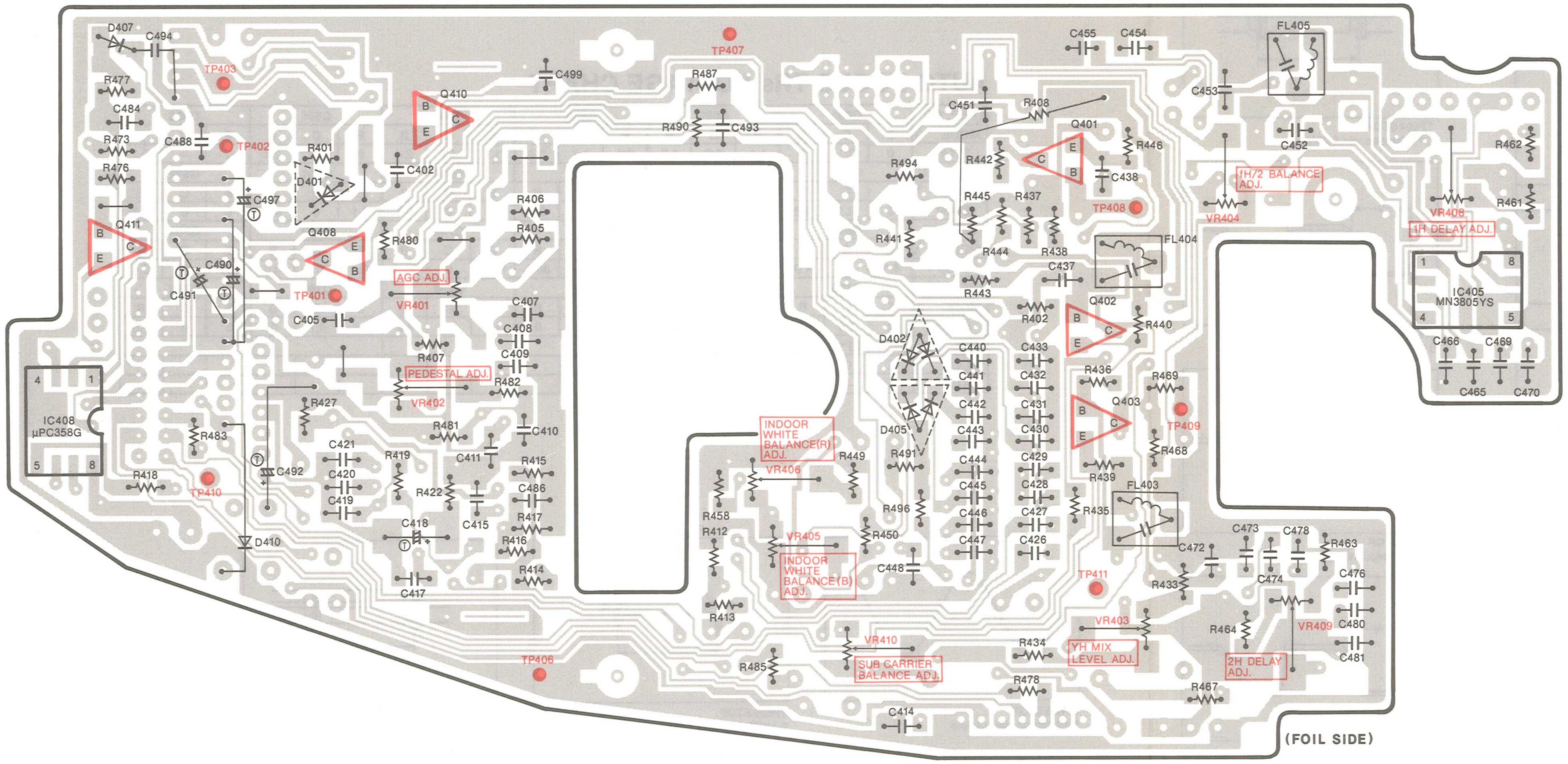
AWT C.B.A. (VEP23050A) (FOIL SIDE)


VR508
VR506
VR505
VR504
D502
R503
R522
R524
AWT(R) OFF SET ADJ.
AWT(R) GAIN ADJ.
AWT(B) GAIN ADJ.
AWT(B) HIGH CLIP ADJ.
AWT(R) HIGH CLIP ADJ.
R532
R521
R525
R541
R533
R523
Q507
C511
R543
VR507
AWT(B) OFF SET ADJ.
R536
C510
R501
R545
R512
R513
R517
R511
R544
C514
C513
R519
TP501
VR501
OUTDOOR WHITE BALANCE(B) ADJ.
R546
VR509
LOW CLIP ADJ.
R537
Q508
VR502
OUTDOOR WHITE BALANCE(R) ADJ.
R502
C517
R505
Q503
Q506
C516
R547
C518
C515
Q504
R504
(FOIL SIDE)

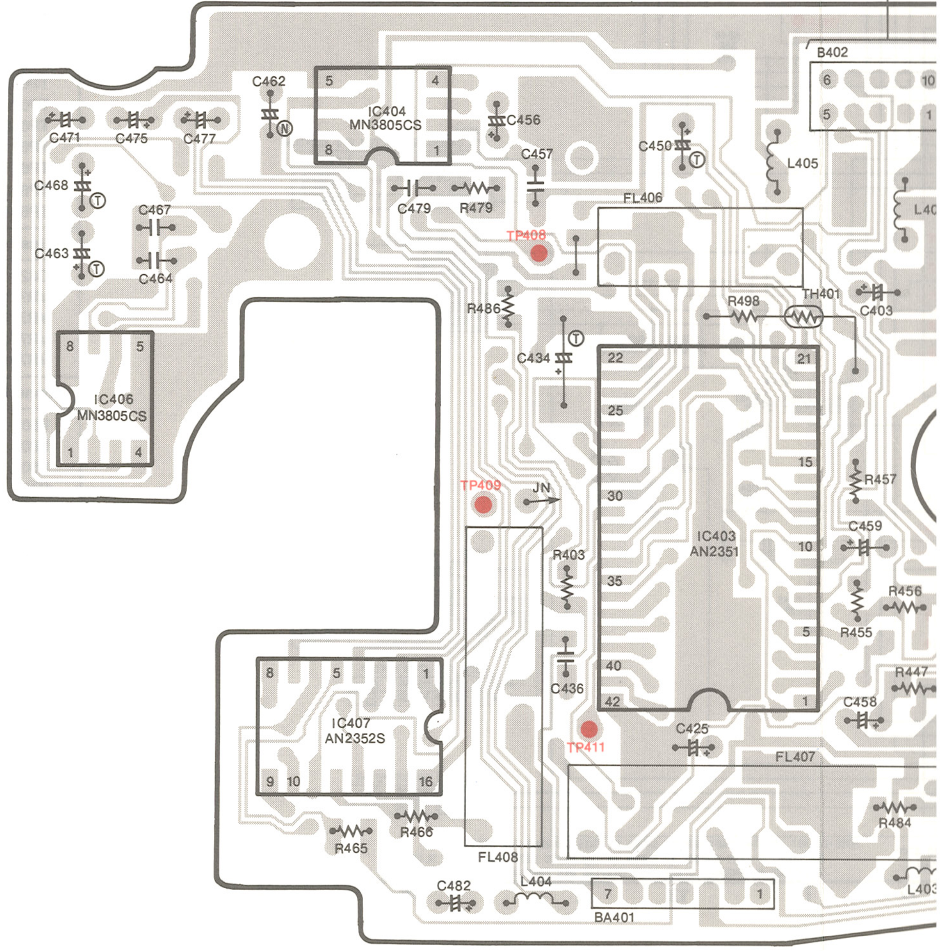

B502
C506
R529
IC502 NJM2902M
IC503 NJM2902M
R542
R530
C508
R526
C507
R520
C509
C512
R516
C505
C504
R527
R535
R515
R548
R549
R528
C503
IC504 NJM2902M
R540
R534
R510
IC501 μPD4066BG
TP501
C502
TH502
TH503
R514
TH505
R539
TH501
TH504
L501
Q501
C501
Q502
B501
P501
R506
FP501
R507
R503
(COMPONENT SIDE)

AWT C.B.A. (VEP23050A) (COMPONENT SIDE)

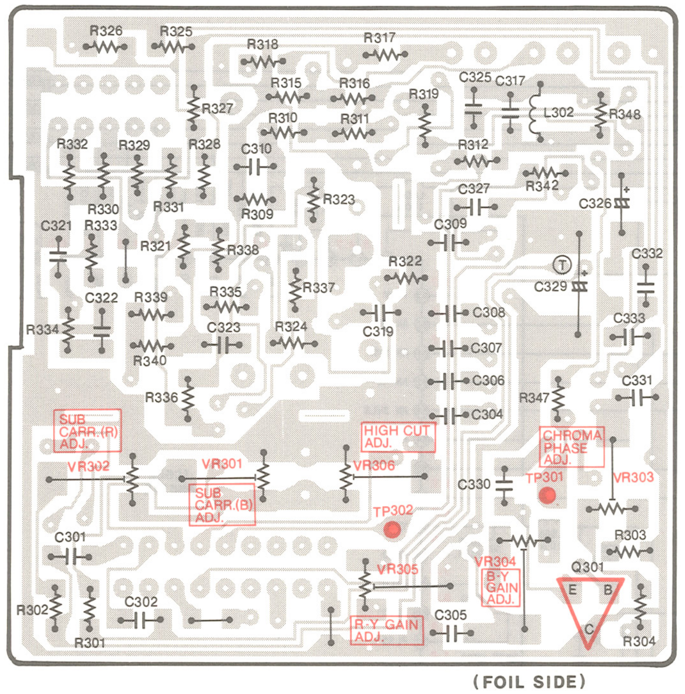
PROCESS C.B.A. (VEP23053B) (FOIL SIDE)


D407
C494
TP403
TP407
C499
R487
C455
C454
FL405
R477
Q410
C484
R490
C493
C451
R408
C453
R473
C488
TP402
R401
C402
Q401
R446
C452
R462
R476
D401
R494
R442
C438
1H/2 BALANCE ADJ.
C497
R406
R445
R437
TP408
VR404
VR408
R461
Q411
Q408
R405
R480
R441
1H DELAY ADJ.
C490
R444
R438
FL404
C491
AGC ADJ.
C437
TP401
VR401
C407
R443
IC405 MN3805YS
C405
C408
R402
Q402
R440
R407
C409
D402
C440
C433
C466
C469
PEDESTAL ADJ.
R482
C441
C432
R436
R469
C465
C470
IC408 μPC358G
R427
VR402
C442
C431
Q403
R483
R481
C410
INDOOR WHITE BALANCE(R) ADJ.
C443
C430
TP409
C421
R419
C411
R415
VR406
R449
R491
D405
C444
C429
R468
C492
C420
C486
C445
C428
R439
FL403
R418
TP410
R422
R417
C446
C427
R435
C419
C415
R416
R496
C473
C478
D410
C418
R458
VR405
R450
C447
C426
C472
R463
R412
INDOOR WHITE BALANCE(B) ADJ.
C448
TP411
C474
R414
R433
C476
C417
R413
VR403
VR409
C480
VR410
R434
R464
TP406
R485
SUB CARRIER BALANCE ADJ.
YH MIX LEVEL ADJ.
2H DELAY ADJ.
C481
R478
R467
C414
(FOIL SIDE)

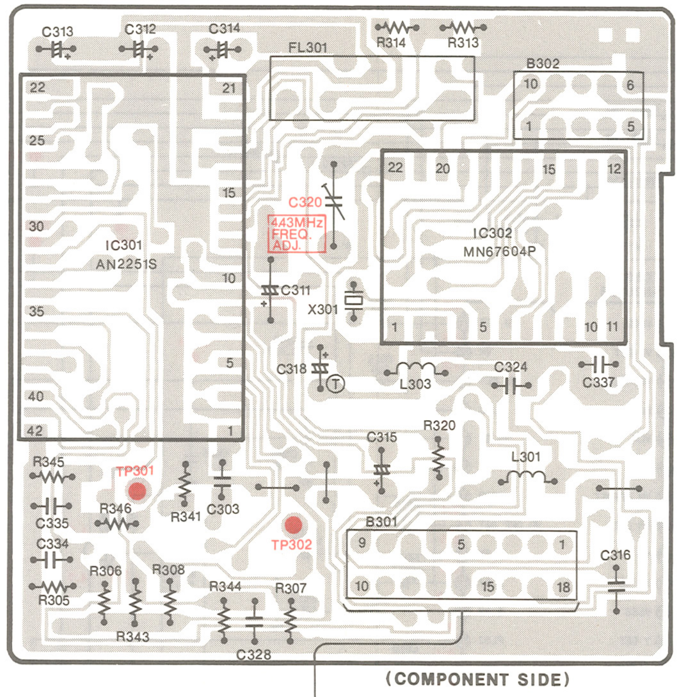
PROCESS C.B.A. (VEP23053B) (COMPONENT SIDE)


B402
C462
IC404 MN3805CS
C456
C471
C475
C477
C457
C450
L405
C468
C479
R479
FL406
C467
TP408
C463
C464
R486
R498
TH401
C403
C434
IC406 MN3805CS
TP409
JN
R457
R403
IC403 AN2351
C459
R456
R455
C436
IC407 AN2352S
R447
C458
C425
TP411
FL407
R465
R466
FL408
R484
C482
L404
BA401
L403

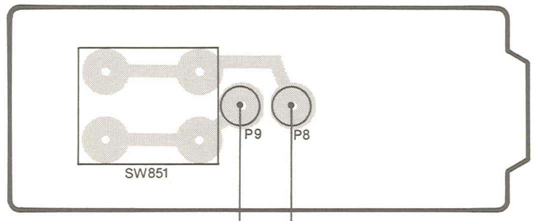
**PROCESS SUB (1) C.B.A. (VEP23054A) (FOIL SIDE)**


SUB CARR.(R) ADJ.
VR302
VR301
SUB CARR.(B) ADJ.
HIGH CUT ADJ.
VR306
CHROMA PHASE ADJ.
TP301
VR303
TP302
VR305
VR304
B-Y GAIN ADJ.
R-Y GAIN ADJ.
Q301
E
B
C
(FOIL SIDE)

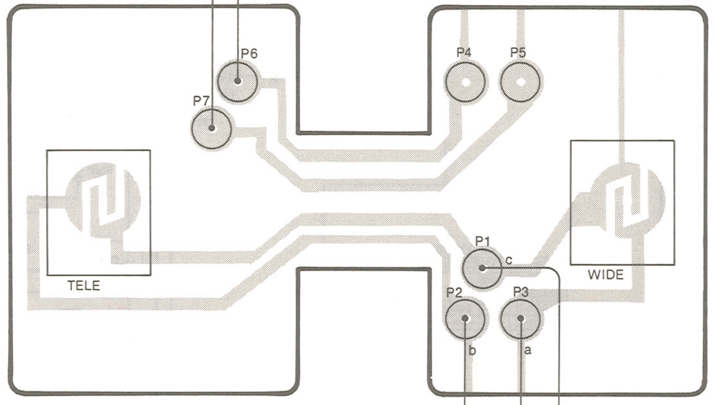
**PROCESS SUB (1) C.B.A. (VEP23054A) (COMPONENT SIDE)**


FL301
B302
IC301
AN2251S
C320
4.43MHz FREQ. ADJ.
IC302
MN67604P
X301
L303
L301
TP301
TP302
B301
(COMPONENT SIDE)

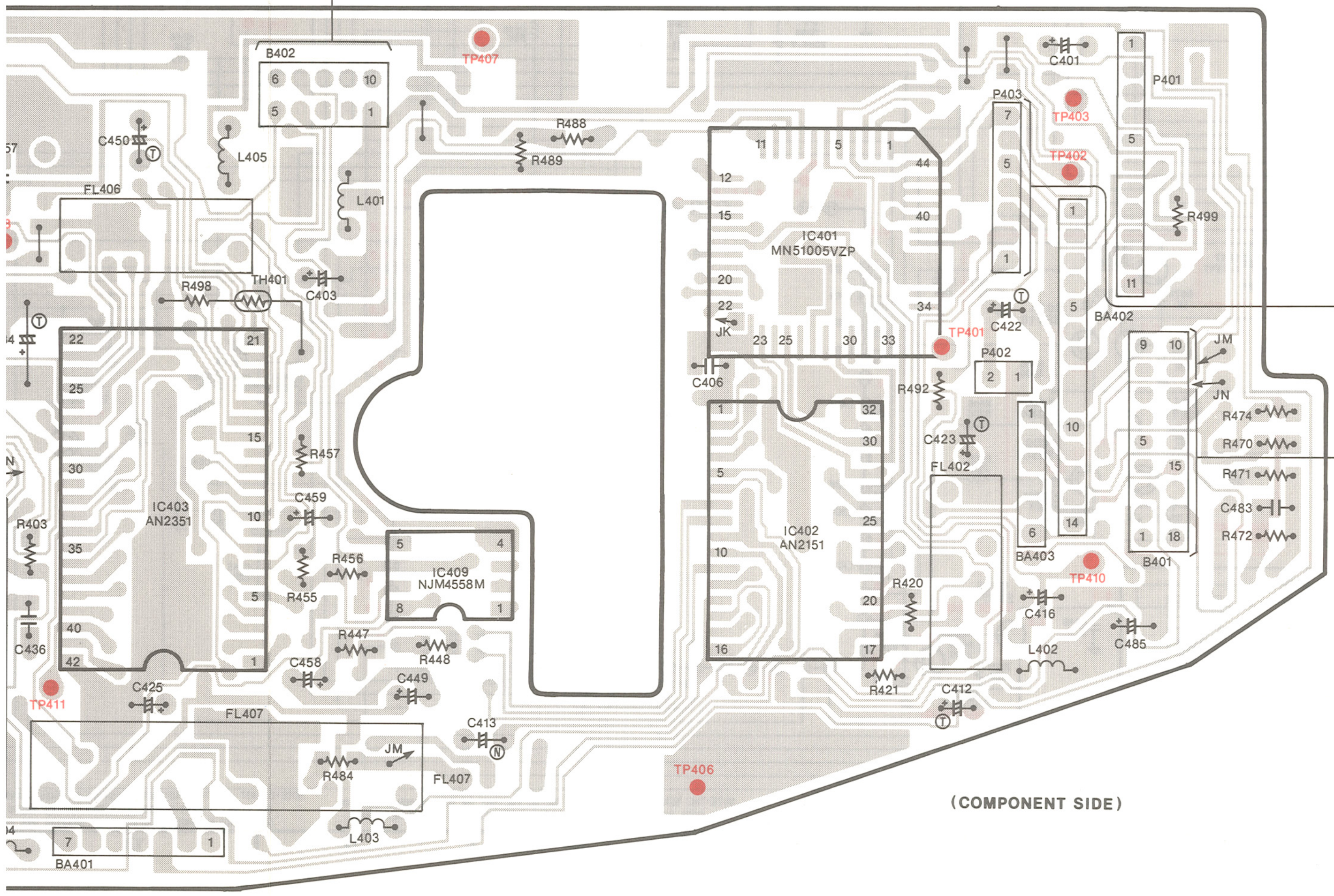
**REC START C.B.A. (VEK3030)**



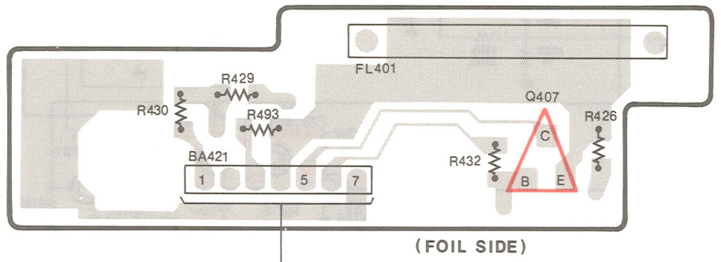
**ZOOM SW C.B.A. (VEK3031)**


P6
P7
P4
P5
TELE
WIDE
P1
c
P2
P3
b
a

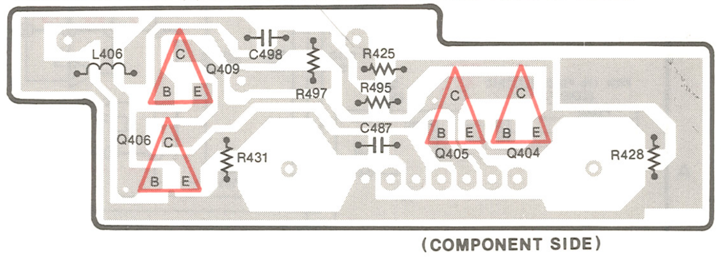
**OMPONENT SIDE)**


B402
TP407
L405
FL406
L401
TH401
IC403
AN2351
IC409
NJM4558M
TP411
FL407
FL407
L403
BA401
IC401
MN51005VZP
TP401
IC402
AN2151
FL402
P403
TP403
TP402
P401
P402
BA402
BA403
TP410
B401
L402
TP406
JM
JN
(COMPONENT SIDE)

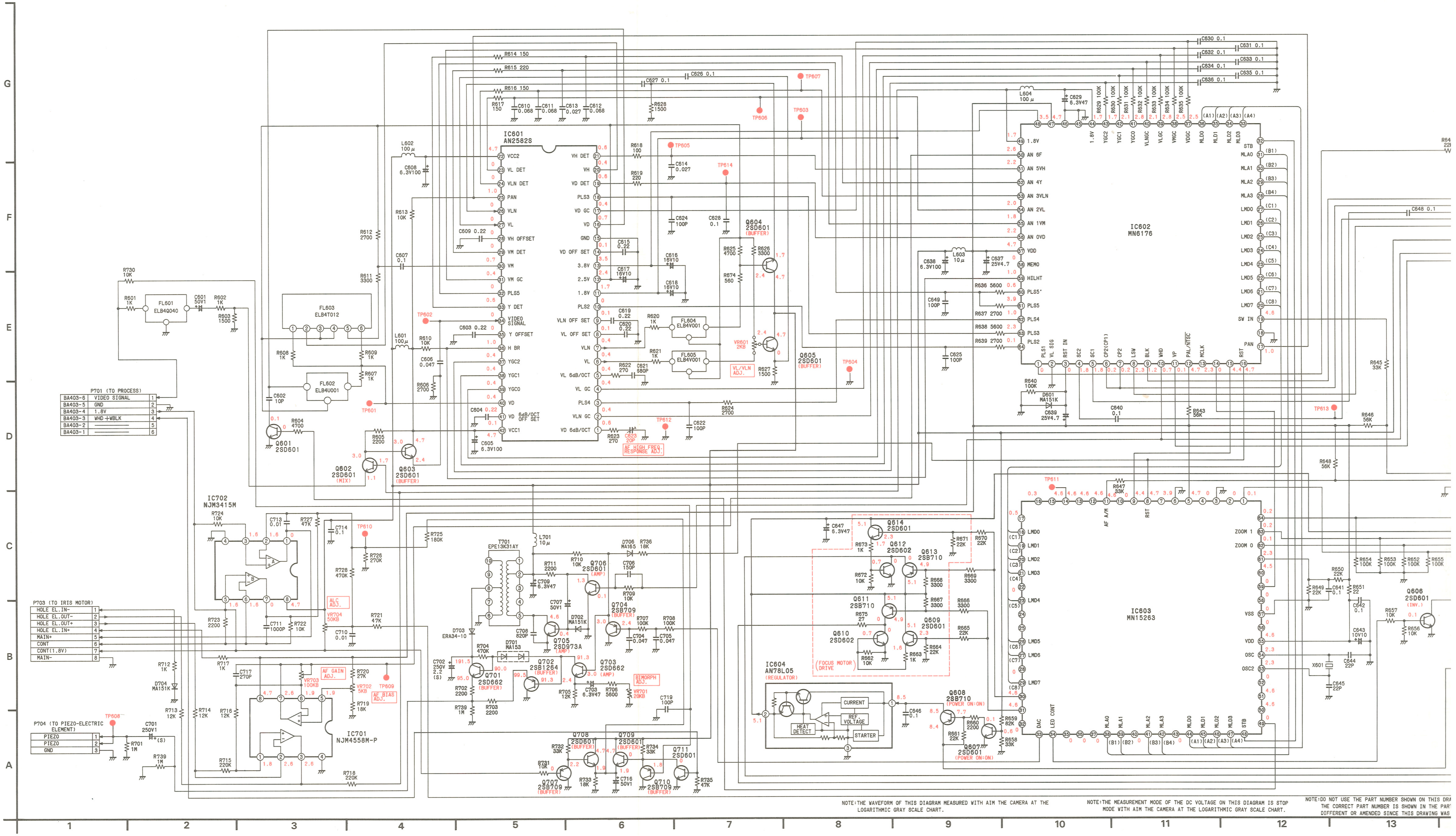
**PROCESS SUB (2) C.B.A. (VEP23052A) (FOIL SIDE)**


FL401
Q407
BA421
C
B
E
(FOIL SIDE)

**PROCESS SUB (2) C.B.A. (VEP23052A) (COMPONENT SIDE)**


L406
Q409
Q406
Q405
Q404
(COMPONENT SIDE)

## 3-11. AUTO FOCUS SCHEMATIC DIAGRAM

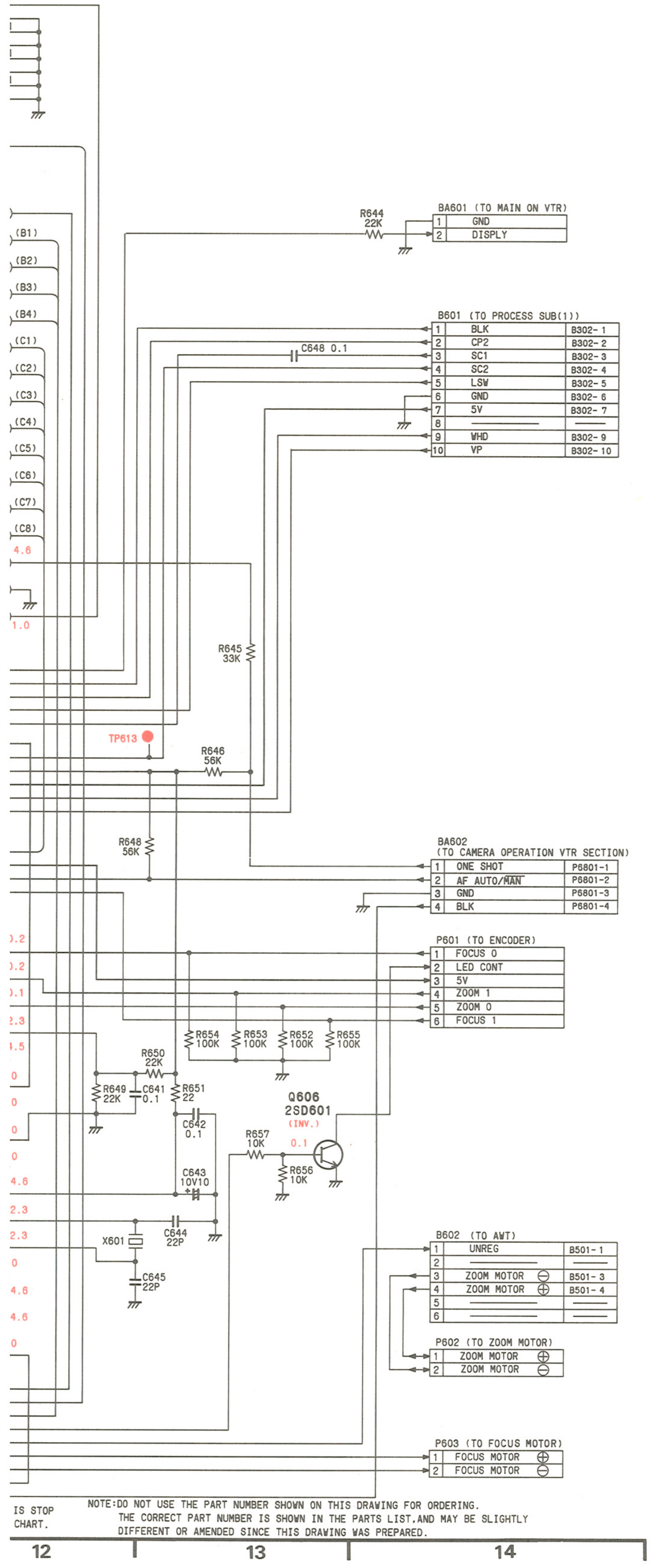

G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
13
IC601
AN2582S
IC602
MN6176
IC603
MN15263
IC604
AN78L05
(REGULATOR)
IC701
NJM4558M-P
IC702
NJM3415M
P701 (TO PROCESS)
BA403-6 VIDEO SIGNAL
BA403-5 GND
BA403-4 1.8V
BA403-3 WHD +WBLK
BA403-2
BA403-1
P703 (TO IRIS MOTOR)
HOLE EL.IN-
HOLE EL.OUT-
HOLE EL.OUT+
HOLE EL.IN+
MAIN+
CONT
CONT(1.8V)
MAIN-
P704 (TO PIEZO-ELECTRIC ELEMENT)
PIEZO
PIEZO
GND
FL601
ELB4Q040
FL602
ELB4U001
FL603
ELB4T012
FL604
ELB4V001
FL605
ELB4V001
Q601
2SD601
Q602
2SD601
(MIX)
Q603
2SD601
(BUFFER)
Q604
2SD601
(BUFFER)
Q605
2SD601
(BUFFER)
Q606
2SD601
(INV.)
Q607
2SD601
(POWER ON:ON)
Q608
2SB710
(POWER ON:ON)
Q609
2SD601
Q610
2SD602
Q611
2SB710
Q612
2SD602
Q613
2SB710
Q614
2SD601
(FOCUS MOTOR DRIVE)
Q701
2SD662
(BUFFER)
Q702
2SB1264
(BUFFER)
Q703
2SD662
(AMP)
Q704
2SB709
(BUFFER)
Q705
2SD973A
(AMP)
Q706
2SD601
(AMP)
Q707
2SB709
(BUFFER)
Q708
2SD601
(BUFFER)
Q709
2SD601
(BUFFER)
Q710
2SB709
(BUFFER)
Q711
2SD601
T701
EPE13K31AY
D701
MA153
D702
MA151K
D703
ERA34-10
D704
MA151K
D706
MA165
D601
MA151K
X601
VR601
2KB
VL/VLN ADJ.
VR701
20KB
BIMORPH ADJ.
VR702
5KB
AF BIAS ADJ.
VR703
100KB
AF GAIN ADJ.
VR704
50KB
ALC ADJ.
AF HIGH FREQ. RESPONSE ADJ.
TP601
TP602
TP603
TP604
TP605
TP606
TP607
TP608
TP609
TP610
TP611
TP612
TP613
TP614
CURRENT
REF. VOLTAGE
HEAT DETECT
STARTER
VCC2
VL DET
VLN DET
PAN
VLN
VL
VH OFFSET
VM DET
VM
VM GC
PLS5
Y DET
VIDEO SIGNAL
Y OFFSET
H BR
YGC2
YGC1
YGC0
VD
VD 6dB/OCT OFF SET
VCC1
VH DET
VH
VD DET
PLS3
VD GC
GND
VD OFF SET
3.8V
2.5V
1.8V
PLS2
VLN OFF SET
VL OFF SET
VL 6dB/OCT
VL GC
PLS4
VLN GC
VD 6dB/OCT
1.8V
AN 6F
AN 5VH
AN 4Y
AN 3VLN
AN 2VL
AN 1VM
AN 0VD
VDD
MEMO
HILHT
PLS5'
PLS5
PLS4
PLS3
PLS2
PLS1
VL SIG
RST IN
SC2
SC1
CP2(CP1)
CP2
LSW
BLK
WHD
VP
PAL/NTSC
MCLK
RST
PAN
SW IN
STB
MLA0
MLA1
MLA2
MLA3
LMD0
LMD1
LMD2
LMD3
LMD4
LMD5
LMD6
LMD7
YGC2
YGC1
YGC0
VLNGC
VLGC
VMGC
VDGC
MLD0
MLD1
MLD2
MLD3
AF A/M
ZOOM 1
ZOOM 0
VSS
VDD
OSC
OSC2
DAC
LED CONT

NOTE:THE WAVEFORM OF THIS DIAGRAM MEASURED WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRA
THE CORRECT PART NUMBER IS SHOWN IN THE PAR
DIFFERENT OR AMENDED SINCE THIS DRAWING WAS

Back Page:
PROCESS, PROCESS (1) · (2) & AWT Section

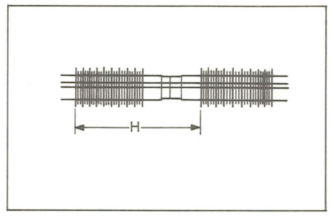

(B1)
(B2)
(B3)
(B4)
(C1)
(C2)
(C3)
(C4)
(C5)
(C6)
(C7)
(C8)
4.6
1.0
R644 22K
BA601 (TO MAIN ON VTR)
1 GND
2 DISPLY
B601 (TO PROCESS SUB(1))
1 BLK B302-1
2 CP2 B302-2
3 SC1 B302-3
4 SC2 B302-4
5 LSW B302-5
6 GND B302-6
7 5V B302-7
8
9 WHD B302-9
10 VP B302-10
C648 0.1
R645 33K
TP613
R646 56K
R648 56K
BA602 (TO CAMERA OPERATION VTR SECTION)
1 ONE SHOT P6801-1
2 AF AUTO/MAN P6801-2
3 GND P6801-3
4 BLK P6801-4
P601 (TO ENCODER)
1 FOCUS 0
2 LED CONT
3 5V
4 ZOOM 1
5 ZOOM 0
6 FOCUS 1
R654 100K
R653 100K
R652 100K
R655 100K
R650 22K
R649 22K
C641 0.1
R651 22
C642 0.1
Q606 2SD601 (INV.)
0.1
R657 10K
R656 10K
C643 10V10
C644 22P
X601
C645 22P
B602 (TO AWT)
1 UNREG B501-1
2
3 ZOOM MOTOR ⊖ B501-3
4 ZOOM MOTOR ⊕ B501-4
5
6
P602 (TO ZOOM MOTOR)
1 ZOOM MOTOR ⊕
2 ZOOM MOTOR ⊖
P603 (TO FOCUS MOTOR)
1 FOCUS MOTOR ⊕
2 FOCUS MOTOR ⊖
IS STOP
CHART.
12
13
14

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST.AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

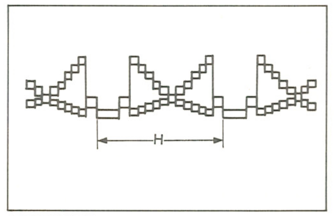
| AUTO FOCUS SCHEMATIC | |
|---|---|
| **Transistor** | |
| Q601 | D-3 |
| Q602 | D-4 |
| Q603 | D-4 |
| Q604 | F-7 |
| Q605 | E-8 |
| Q606 | C-13 |
| Q607 | A-9 |
| Q608 | B-9 |
| Q609 | B-9 |
| Q610 | B-8 |
| Q611 | B-8 |
| Q612 | C-8 |
| Q613 | C-9 |
| Q614 | C-9 |
| Q701 | B-5 |
| Q702 | B-5 |
| Q703 | B-6 |
| Q704 | B-6 |
| Q705 | B-5 |
| Q706 | C-6 |
| Q707 | A-5 |
| Q708 | A-6 |
| Q709 | A-6 |
| Q710 | A-6 |
| Q711 | A-7 |
| **Integrated Circuit** | |
| IC601 | G-5 |
| IC602 | F-11 |
| IC603 | B-11 |
| IC604 | B-7 |
| IC701 | A-4 |
| IC702 | C-2 |
| **Test Point** | |
| TP601 | D-4 |
| TP602 | E-4 |
| TP603 | G-8 |
| TP604 | E-8 |
| TP605 | G-7 |
| TP606 | G-7 |
| TP607 | G-8 |
| TP608 | A-1 |
| TP609 | B-4 |
| TP610 | C-4 |
| TP611 | D-10 |
| TP612 | D-6 |
| TP613 | D-12 |
| TP614 | F-7 |
| **Adjustment** | |
| C623 | D-6 |
| VR701 | B-6 |
| VR702 | B-4 |
| VR703 | B-3 |
| VR704 | B-3 |
| **Connector** | |
| P601 | C-14 |
| P602 | A-14 |
| P603 | A-14 |
| P701 | D-1 |
| P703 | B-1 |
| P704 | A-1 |
| B601 | F-14 |
| B602 | B-14 |
| BA601 | G-14 |
| BA602 | D-14 |

ADDRESS INFORMATION

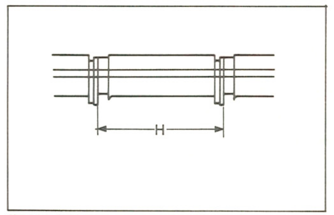
## AUTO FOCUS CIRCUIT TP (Test Point) WAVE FORM (REF No. 600 Series)



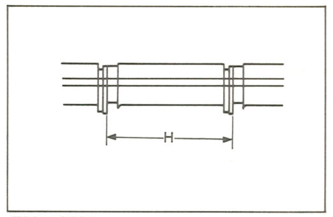
TP601 STOP
0.1V/20μsec. div. 0.45Vp-p



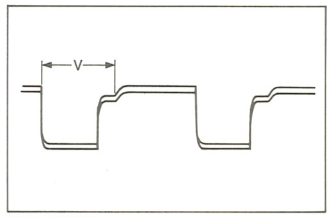
TP602 STOP
0.2V/20μsec. div. 0.38Vp-p



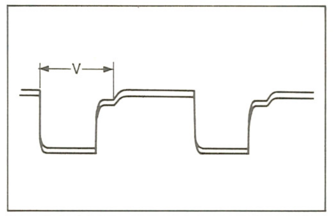
TP603 STOP
0.1V/20μsec. div. 0.25Vp-p



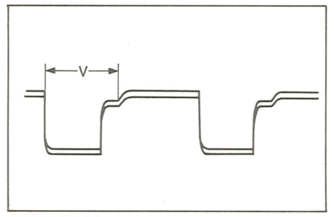
TP604 STOP
0.1V/20μsec. div. 0.25Vp-p



TP605 STOP
0.5V/5msec. div. 1Vp-p



TP606 STOP
0.5V/5msec. div. 0.6Vp-p



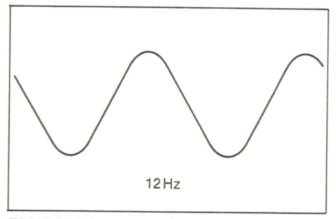
TP607 STOP
0.5V/5msec. div. 1Vp-p

## AUTO FOCUS ICs VOLTAGE CHART

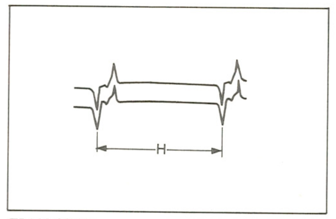
| REF. NO. | IC601 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| STOP | 0.6 | 0.4 | — | 0.4 | 0.4 | 0.4 | 0.4 | 0.1 | 0.1 | 0 | 1.7 | 2.4 | 3.5 | 0.1 | 0 | 0.7 | 0.4 | — | 0.6 | 0.4 |
| REF. NO. | IC601 | | | | | | | | | | | | | | | | | | | |
| MODE | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| STOP | 0.6 | 4.7 | 0 | 0 | 1.0 | 0 | 0 | 0 | 0 | 0.7 | 0.4 | 0 | 0.6 | 0 | 0 | 1.0 | 0.4 | 0.4 | 0.4 | 0.4 |
| REF. NO. | IC601 | | | | | | | | | | | | | | | | | | | |
| MODE | 41 | 42 | | | | | | | | | | | | | | | | | | |
| STOP | 0.1 | 4.7 | | | | | | | | | | | | | | | | | | |
| REF. NO. | IC602 | | | | | | | | | | | | | | | | | | | |
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| STOP | 0 | 0 | 0 | 1.8 | 1.8 | 0.2 | 0.2 | 2.3 | 1.2 | 0.7 | 0.1 | 4.7 | 2.3 | 0 | 4.4 | 4.7 | 1.0 | 0 | 4.6 | — |
| REF. NO. | IC602 | | | | | | | | | | | | | | | | | | | |
| MODE | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| STOP | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 2.5 | 2.5 | 2.8 | 2.1 |
| REF. NO. | IC602 | | | | | | | | | | | | | | | | | | | |
| MODE | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| STOP | 2.8 | 2.1 | 1.7 | 1.7 | 0 | 0 | 4.7 | 3.5 | 1.7 | 2.6 | 2.2 | — | — | 2.0 | 1.8 | 2.2 | 4.7 | 0 | 1.0 | 0.6 |
| REF. NO. | IC602 | | | | | | | | | | | | | | | | | | | |
| MODE | 61 | 62 | 63 | 64 | | | | | | | | | | | | | | | | |
| STOP | 3.9 | 1.0 | 2.3 | 0.1 | | | | | | | | | | | | | | | | |
| REF. NO. | IC603 | | | | | | | | | | | | | | | | | | | |
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| STOP | 0.1 | 0 | 0 | 0 | 4.7 | 0 | 3.9 | 4.7 | 4.4 | 0 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 0.3 | 0.5 | — | — | — |
| REF. NO. | IC603 | | | | | | | | | | | | | | | | | | | |
| MODE | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| STOP | — | 0 | — | — | — | — | — | 0 | — | 4.6 | 4.6 | 0 | — | — | 0 | 0 | 0 | — | — | 0 |
| REF. NO. | IC603 | | | | | | | | | | | | | | | | | | | |
| MODE | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| STOP | — | — | 0 | — | — | — | — | — | 0 | 4.6 | 4.6 | 0 | 2.3 | 2.3 | 4.6 | 0 | 0 | 0 | 0 | 4.5 |
| REF. NO. | IC603 | | | | | | | | | | IC604 | | | | | | | | | |
| MODE | 61 | 62 | 63 | 64 | | | | | | | 1 | 2 | 3 | | | | | | | |
| STOP | 2.3 | 0.1 | 0.2 | 0.2 | | | | | | | 8.5 | 5.1 | 0 | | | | | | | |
| REF. NO. | IC701 | | | | | | | | | | IC702 | | | | | | | | | |
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | |
| STOP | 1.8 | 2.6 | 2.6 | 0 | 1.9 | 1.9 | 2.6 | 4.7 | | | 0 | 1.6 | 1.6 | 0 | 1.6 | 1.6 | 0 | 4.7 | | |

## AUTO FOCUS TRs VOLTAGE CHART

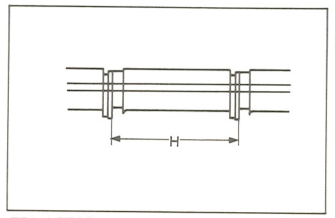
| REF. NO. | Q601 | | | Q602 | | | Q603 | | | Q604 | | | Q605 | | | Q606 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B |
| STOP | 0 | 0.1 | 0 | 1.1 | 3.0 | 1.7 | 2.4 | 4.7 | 3.0 | 1.7 | 4.7 | 2.4 | 0 | 4.7 | 2.4 | 0 | — | 0.1 |
| REF. NO. | Q607 | | | Q608 | | | Q609 | | | Q610 | | | Q611 | | | Q612 | | |
| MODE | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B |
| STOP | 0 | 0.1 | 0.6 | 8.4 | 8.5 | 7.7 | 1.6 | 5.1 | 2.3 | 0 | 0 | 0.7 | 5.1 | 0 | 4.9 | 0 | 0 | 0.7 |
| REF. NO. | Q613 | | | Q614 | | | Q701 | | | Q702 | | | Q703 | | | Q704 | | |
| MODE | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B |
| STOP | 5.1 | 0 | 4.9 | 1.7 | 5.1 | 2.3 | 95.0 | 191.5 | 90.0 | 99.5 | 0 | 91.3 | 2.4 | 91.3 | 3.0 | 3.0 | 0 | 2.4 |
| REF. NO. | Q705 | | | Q706 | | | Q707 | | | Q708 | | | Q709 | | | Q710 | | |
| MODE | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B |
| STOP | 0 | 4.6 | 0.4 | 0 | 1.3 | 0.1 | 2.2 | 0 | 0 | 1.9 | 4.7 | 2.2 | 1.9 | 4.7 | 0 | 0 | 0 | 1.8 |
| REF. NO. | Q711 | | | | | | | | | | | | | | | | | |
| MODE | E | C | B | | | | | | | | | | | | | | | |
| STOP | 0 | — | — | | | | | | | | | | | | | | | |



TP608 STOP
5V/20msec. div. 13Vp-p

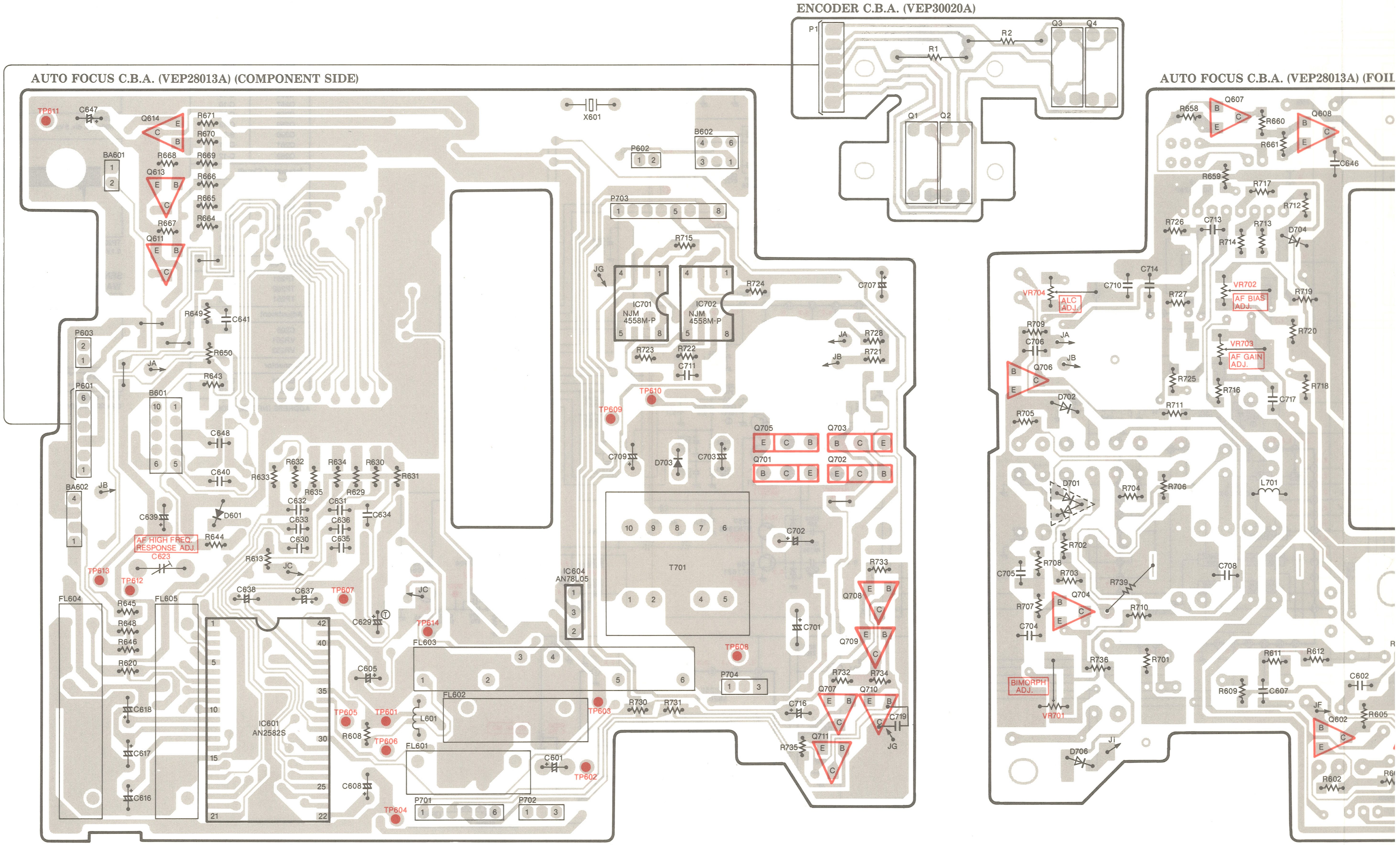


TP609 STOP
0.1V/20μsec. div. 0.35Vp-p



TP610 STOP
0.1V/20μsec. div. 0.45Vp-p

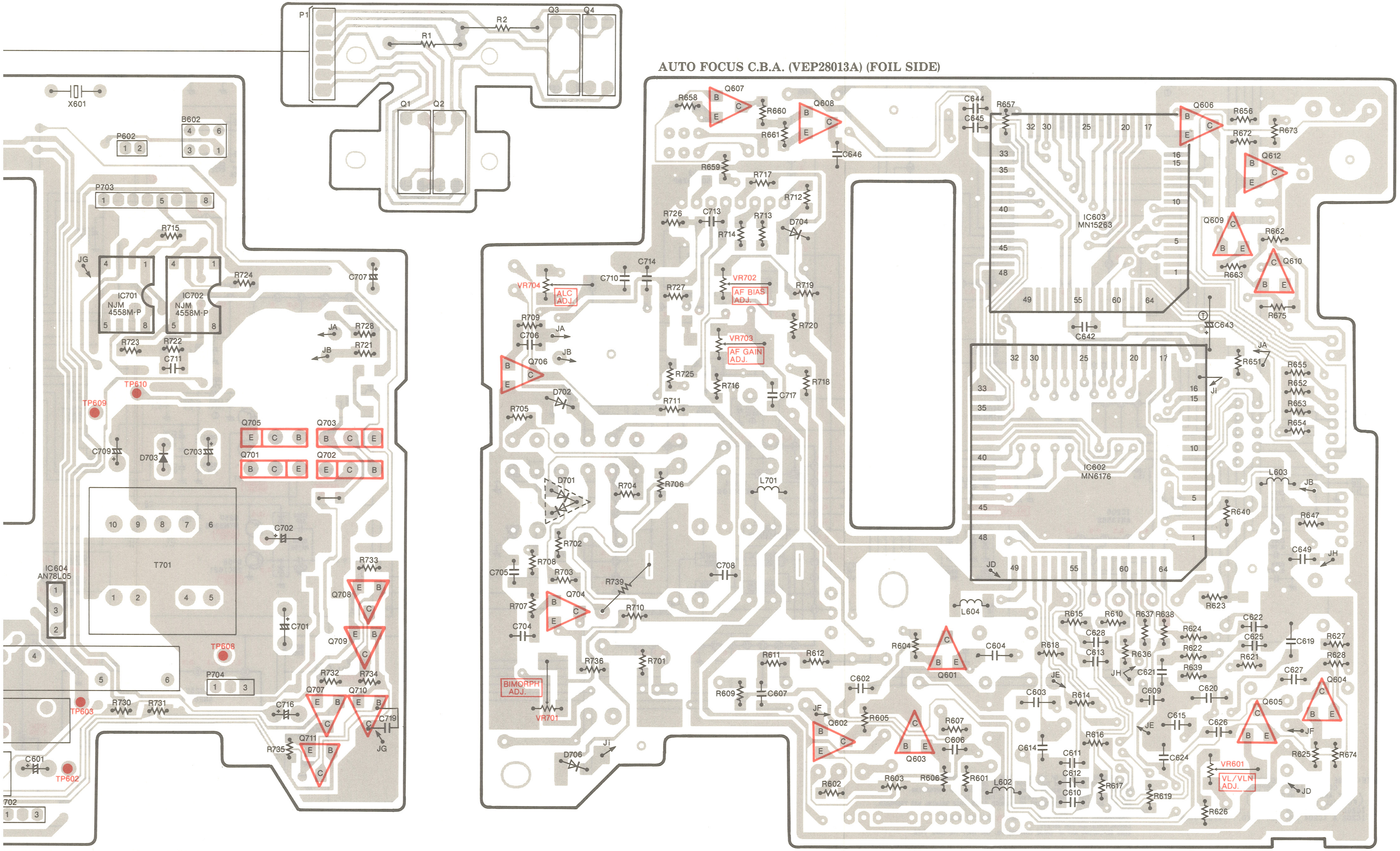
## 3-12. AUTO FOCUS CIRCUIT BOARD (VEP28013A)



ENCODER C.B.A. (VEP30020A)
AUTO FOCUS C.B.A. (VEP28013A) (COMPONENT SIDE)
AUTO FOCUS C.B.A. (VEP28013A) (FOIL
P1
R1
R2
Q1
Q2
Q3
Q4
TP611
C647
Q614
R671
R670
R669
R668
R666
R665
R664
R667
Q613
Q611
BA601
X601
B602
P602
P703
JG
R715
IC701
NJM 4558M-P
IC702
NJM 4558M-P
R724
C707
R728
R721
R723
R722
C711
JA
JB
TP610
TP609
Q705
Q703
Q701
Q702
C709
D703
C703
R649
C641
R650
P603
P601
R643
B601
C648
C640
R632
R634
R630
R633
R635
R629
R631
C632
C631
C633
C636
C630
C635
C634
BA602
C639
D601
AF HIGH FREQ. RESPONSE ADJ.
C623
R644
R613
JC
TP613
TP612
C638
C637
TP607
IC604
AN78L05
T701
C702
R733
Q708
Q709
C701
FL604
FL605
R645
R648
R646
R620
C629
TP614
FL603
TP608
P704
C605
IC601
AN2582S
C618
C617
C616
TP605
TP601
R608
TP606
L601
FL602
FL601
TP603
R730
R731
R732
R734
Q707
Q710
C716
C719
Q711
R735
C601
TP602
C608
TP604
P701
P702
Q607
Q608
R658
R660
R661
C646
R659
R717
R712
R726
C713
R713
R714
D704
C714
C710
VR704
ALC ADJ.
R727
VR702
AF BIAS ADJ.
R719
R709
C706
R720
VR703
AF GAIN ADJ.
Q706
R725
R716
R718
D702
R711
C717
R705
D701
R704
R706
L701
R702
R708
C705
R703
C708
R739
Q704
R707
R710
C704
R736
R701
R611
R612
BIMORPH ADJ.
VR701
R609
C607
C602
JF
Q602
R605
JI
D706
R602

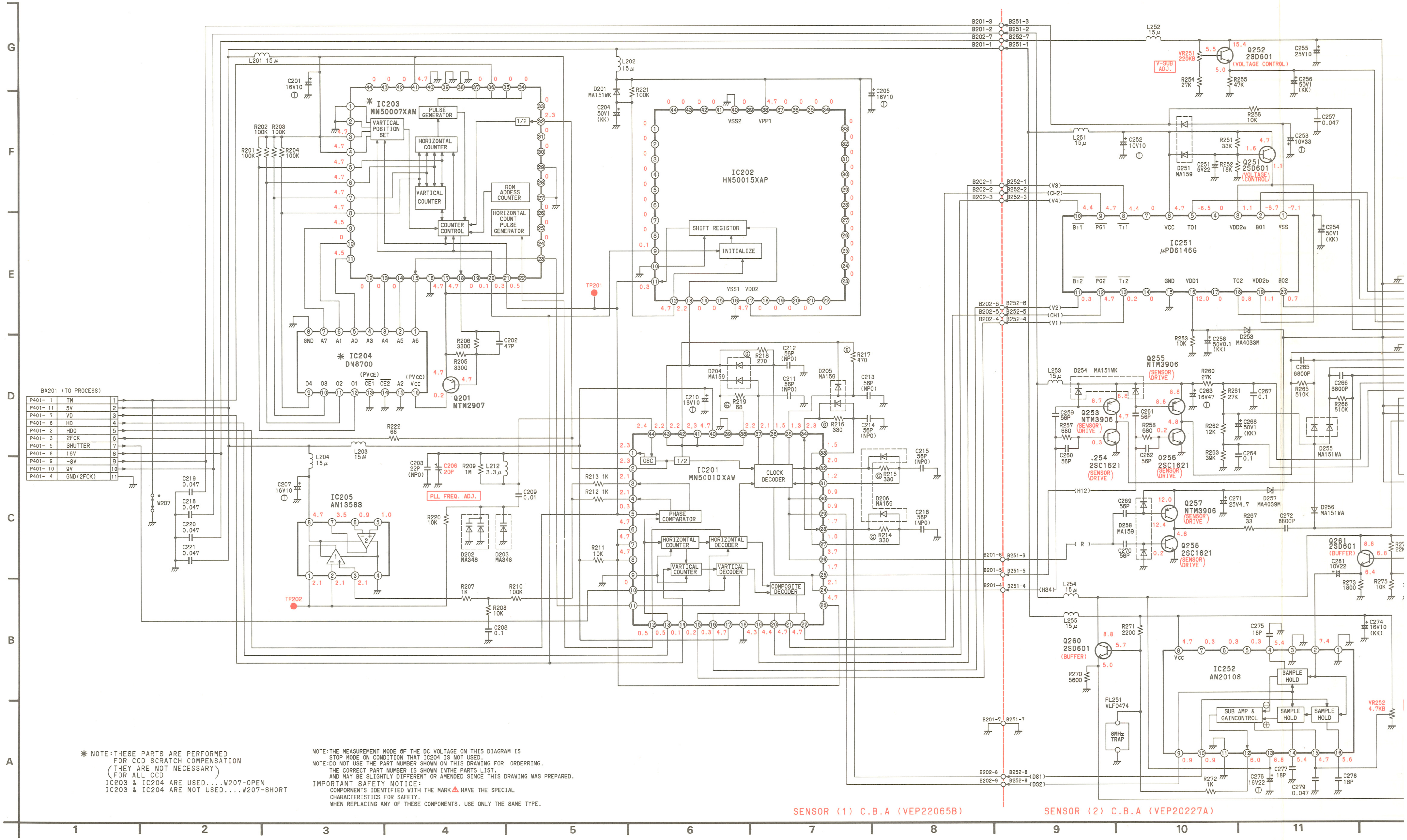
## ENCODER C.B.A. (VEP30020A)

## AUTO FOCUS C.B.A. (VEP28013A) (FOIL SIDE)


P1
R1
R2
Q1
Q2
Q3
Q4
X601
B602
P602
P703
R715
JG
IC701
NJM
4558M-P
IC702
NJM
4558M-P
R724
C707
JA
JB
R728
R721
R723
R722
C711
TP610
TP609
C709
D703
C703
Q705
E C B
Q703
B C E
Q701
B C E
Q702
E C B
T701
C702
IC604
AN78L05
C701
R733
Q708
Q709
TP608
P704
R732
R734
Q707
Q710
R730
R731
TP603
C716
C719
Q711
R735
C601
TP602
702
Q607
R658
R660
Q608
R661
C646
C644
C645
R657
R659
R717
R712
R726
C713
R713
D704
R714
C714
C710
VR704
ALC ADJ.
R727
VR702
AF BIAS ADJ.
R719
R709
C706
R720
VR703
AF GAIN ADJ.
Q706
R725
R716
R718
C717
D702
R705
R711
D701
R704
R706
L701
R702
R708
C705
R703
C708
R739
Q704
R707
R710
C704
R736
R701
BIMORPH ADJ.
VR701
D706
JI
IC603
MN15263
Q606
R656
R672
R673
Q612
Q609
R662
Q610
R663
R675
C643
C642
JA
R651
JI
R655
R652
R653
R654
IC602
MN6176
L603
JB
R640
R647
C649
JH
JD
L604
R623
R615
R610
R637
R638
C622
C628
R624
C625
C619
R627
R604
Q601
C604
R618
C613
R636
R622
R628
R611
R612
JE
JH
C621
R639
R621
C627
C602
C603
R614
C609
C620
Q604
R609
C607
Q605
JF
R605
Q602
R607
C606
Q603
C615
C626
JE
JF
C614
C611
R616
C624
VR601
VL/VLN ADJ.
R625
R674
R602
R603
R606
R601
L602
C612
C610
R617
R619
JD
R626

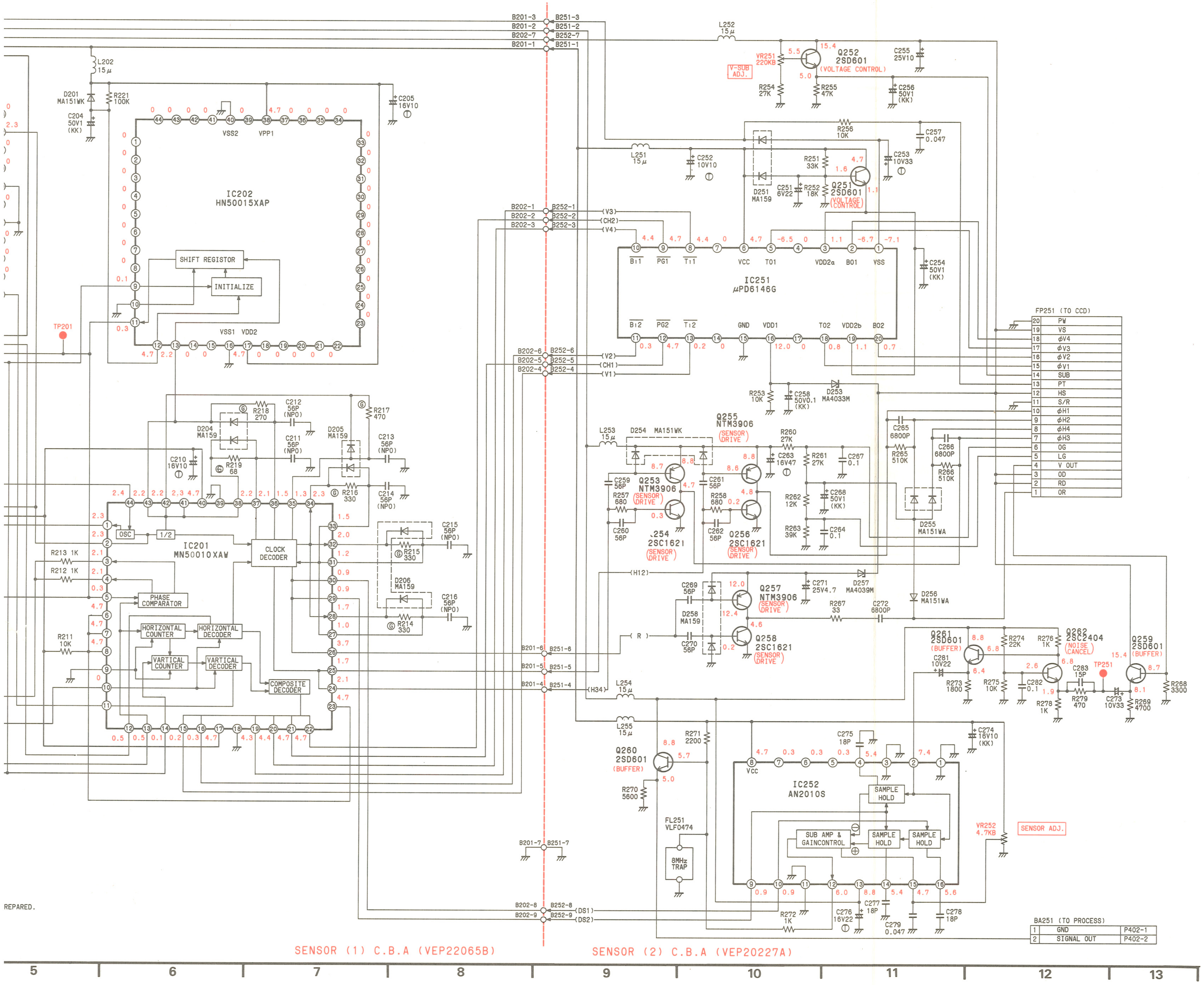
Next Page:
SENSOR (1)·(2) Section

# 3-13. SENSOR (1) & SENSOR (2) SCHEMATIC DIAGRAM


BA201 (TO PROCESS)
P401- 1 TM 1
P401- 11 5V 2
P401- 7 VD 3
P401- 6 HD 4
P401- 2 HDO 5
P401- 3 2FCK 6
P401- 5 SHUTTER 7
P401- 8 16V 8
P401- 9 -8V 9
P401- 10 9V 10
P401- 4 GND(2FCK) 11
W207
IC203 MN50007XAN
VARTICAL POSITION SET
PULSE GENERATOR
HORIZONTAL COUNTER
VARTICAL COUNTER
ROM ADDESS COUNTER
HORIZONTAL COUNT PULSE GENERATOR
COUNTER CONTROL
1/2
IC204 DN8700
Q201 NTM2907
IC202 HN50015XAP
SHIFT REGISTOR
INITIALIZE
VSS2 VPP1
VSS1 VDD2
IC201 MN50010XAW
OSC
CLOCK DECODER
PHASE COMPARATOR
HORIZONTAL COUNTER
HORIZONTAL DECODER
VARTICAL COUNTER
VARTICAL DECODER
COMPOSITE DECODER
IC205 AN1358S
PLL FREQ. ADJ.
TP201
TP202
D202 MA348
D203 MA348
Q252 2SD601 (VOLTAGE CONTROL)
Q251 2SD601 (VOLTAGE CONTROL)
VR251 220KB V-SUB ADJ.
IC251 µPD6146G
Q253 NTM3906 (SENSOR DRIVE)
Q254 2SC1621 (SENSOR DRIVE)
Q255 NTM3906 (SENSOR DRIVE)
Q256 2SC1621 (SENSOR DRIVE)
Q257 NTM3906 (SENSOR DRIVE)
Q258 2SC1621 (SENSOR DRIVE)
Q260 2SD601 (BUFFER)
Q261 2SD601 (BUFFER)
IC252 AN2010S
SAMPLE HOLD
SUB AMP & GAINCONTROL
FL251 VLF0474
8MHz TRAP
VR252 4.7KB
SENSOR (1) C.B.A (VEP22065B)
SENSOR (2) C.B.A (VEP20227A)

✳ NOTE:THESE PARTS ARE PERFORMED
FOR CCD SCRATCH COMPENSATION
(THEY ARE NOT NECESSARY
FOR ALL CCD )
IC203 & IC204 ARE USED....W207-OPEN
IC203 & IC204 ARE NOT USED....W207-SHORT

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS
STOP MODE ON CONDITION THAT IC204 IS NOT USED.
NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.
THE CORRECT PART NUMBER IS SHOWN INTHE PARTS LIST.
AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.
IMPORTANT SAFETY NOTICE:
CONPORNENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL
CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS. USE ONLY THE SAME TYPE.

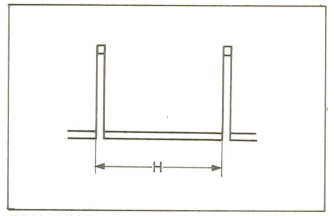

B201-3
B201-2
B202-7
B201-1
B251-3
B251-2
B252-7
B251-1
L202 15μ
D201 MA151WK
R221 100K
C204 50V1 (KK)
C205 16V10
IC202
HN50015XAP
VSS2
VPP1
VSS1
VDD2
SHIFT REGISTOR
INITIALIZE
TP201
D204 MA159
R218 270
C212 56P (NPO)
C211 56P (NPO)
R219 68
C210 16V10
D205 MA159
R217 470
C213 56P (NPO)
R216 330
C214 56P (NPO)
IC201
MN50010XAW
OSC
1/2
CLOCK DECODER
PHASE COMPARATOR
HORIZONTAL COUNTER
HORIZONTAL DECODER
VARTICAL COUNTER
VARTICAL DECODER
COMPOSITE DECODER
R213 1K
R212 1K
R211 10K
C215 56P (NPO)
R215 330
D206 MA159
C216 56P (NPO)
R214 330
B202-1
B202-2
B202-3
B252-1
B252-2
B252-3
(V3)
(CH2)
(V4)
B202-6
B202-5
B202-4
B252-6
B252-5
B252-4
(V2)
(CH1)
(V1)
L252 15μ
VR251 220KB
V-SUB ADJ.
Q252 2SD601
(VOLTAGE CONTROL)
C255 25V10
R254 27K
R255 47K
C256 50V1 (KK)
L251 15μ
C252 10V10
R256 10K
C257 0.047
R251 33K
Q251 2SD601
(VOLTAGE CONTROL)
C253 10V33
D251 MA159
C251 6V22
R252 18K
IC251
μPD6146G
VCC
T01
VDD2a
B01
VSS
B12
PG2
T12
GND
VDD1
T02
VDD2b
B02
C254 50V1 (KK)
R253 10K
C258 50V0.1 (KK)
D253 MA4033M
L253 15μ
D254 MA151WK
Q255 NTM3906 (SENSOR DRIVE)
R260 27K
C263 16V47
R261 27K
C267 0.1
C259 56P
Q253 NTM3906 (SENSOR DRIVE)
R257 680
C261 56P
R258 680
C260 56P
Q254 2SC1621 (SENSOR DRIVE)
C262 56P
Q256 2SC1621 (SENSOR DRIVE)
R262 12K
C268 50V1 (KK)
R263 39K
C264 0.1
C265 6800P
R265 510K
C266 6800P
R266 510K
D255 MA151WA
FP251 (TO CCD)
PW
VS
φV4
φV3
φV2
φV1
SUB
PT
HS
S/R
φH1
φH2
φH4
φH3
OG
LG
V OUT
OD
RD
OR
(H12)
C269 56P
D258 MA159
C270 56P
Q257 NTM3906 (SENSOR DRIVE)
C271 25V4.7
D257 MA4039M
R267 33
C272 6800P
Q258 2SC1621 (SENSOR DRIVE)
D256 MA151WA
( R )
B201-6
B201-5
B201-4
B251-6
B251-5
B251-4
(H34)
L254 15μ
Q261 2SD601 (BUFFER)
C281 10V22
R273 1800
R274 22K
R275 10K
Q262 2SC2404 (NOISE CANCEL)
R276 1K
C282 0.1
C283 15P
TP251
R279 470
R278 1K
C273 10V33
Q259 2SD601 (BUFFER)
R269 4700
R268 3300
L255 15μ
Q260 2SD601 (BUFFER)
R271 2200
R270 5600
C275 18P
C274 16V10 (KK)
IC252
AN2010S
SAMPLE HOLD
SUB AMP & GAINCONTROL
SAMPLE HOLD
SAMPLE HOLD
VR252 4.7KB
SENSOR ADJ.
FL251 VLF0474
8MHz TRAP
B201-7
B251-7
B202-8
B202-9
B252-8
B252-9
(DS1)
(DS2)
R272 1K
C276 16V22
C277 18P
C279 0.047
C278 18P
BA251 (TO PROCESS)
GND
SIGNAL OUT
P402-1
P402-2
REPARED.
SENSOR (1) C.B.A (VEP22065B)
SENSOR (2) C.B.A (VEP20227A)
5
6
7
8
9
10
11
12
13

## SENSOR (1) & SENSOR (2) SCHEMATIC

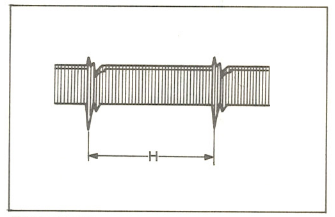
| | |
|---|---|
| **Transistor** | |
| Q201 | D-4 |
| Q251 | F-11 |
| Q252 | G-11 |
| Q253 | D-9 |
| Q254 | C-9 |
| Q255 | D-10 |
| Q256 | C-10 |
| Q257 | C-10 |
| Q258 | C-10 |
| Q259 | C-13 |
| Q260 | B-9 |
| Q261 | C-11 |
| Q262 | C-12 |
| **Integrated Circuit** | |
| IC201 | C-6 |
| IC202 | F-7 |
| IC203 | F-4 |
| IC204 | D-3 |
| IC205 | C-3 |
| IC251 | E-10 |
| IC252 | B-10 |
| **Test Point** | |
| TP201 | E-5 |
| TP202 | B-3 |
| TP251 | C-12 |
| **Adjustment** | |
| C206 | C-4 |
| VR251 | G-10 |
| VR252 | A-12 |
| **Connector** | |
| BA201 | D-1 |
| FP251 | E-12 |

ADDRESS INFORMATION

## SENSOR (1) CIRCUIT TP (Test Point) WAVE FORM (REF No. 200 Series)

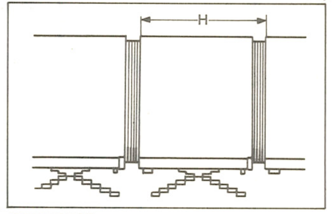


TP201 STOP
2V/20μsec. div. 5Vp-p



TP202 STOP
0.1V/20μsec. div. 0.2Vp-p

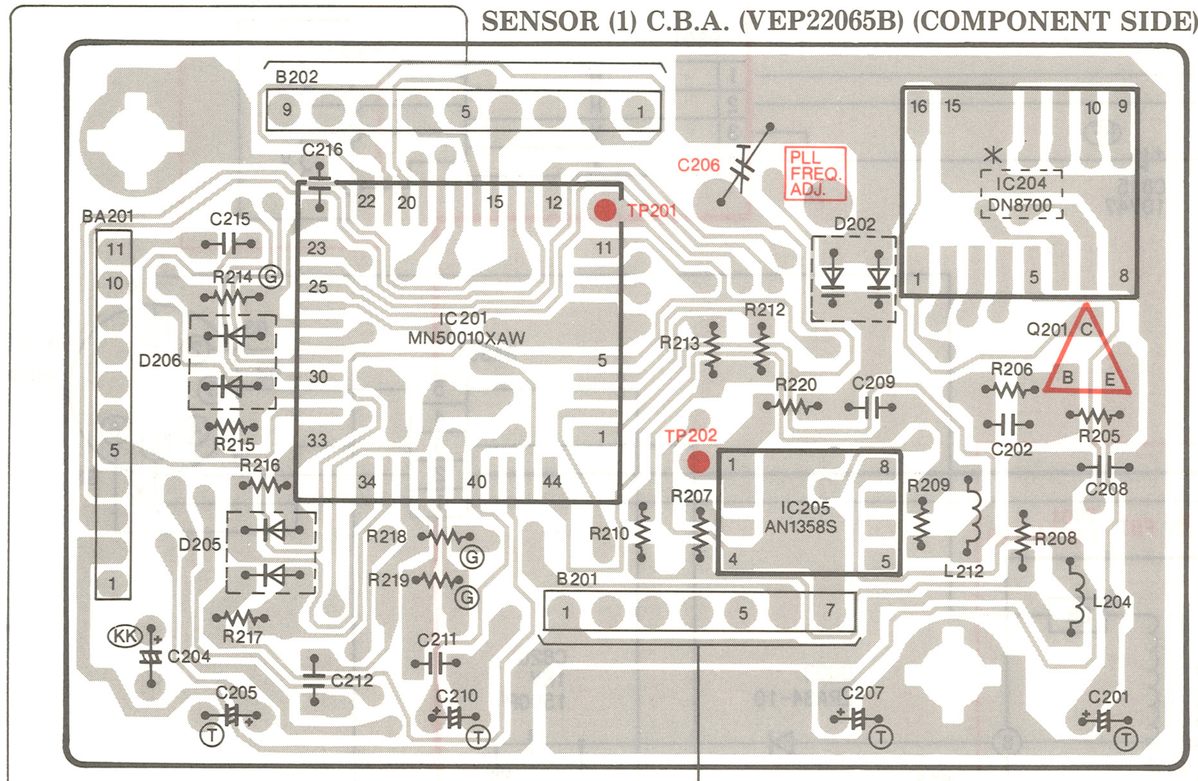
## SENSOR (2) CIRCUIT TP (Test Point) WAVE FORM (REF No. 250 Series)



TP251 STOP
0.2V/20μsec. div. 0.8Vp-p

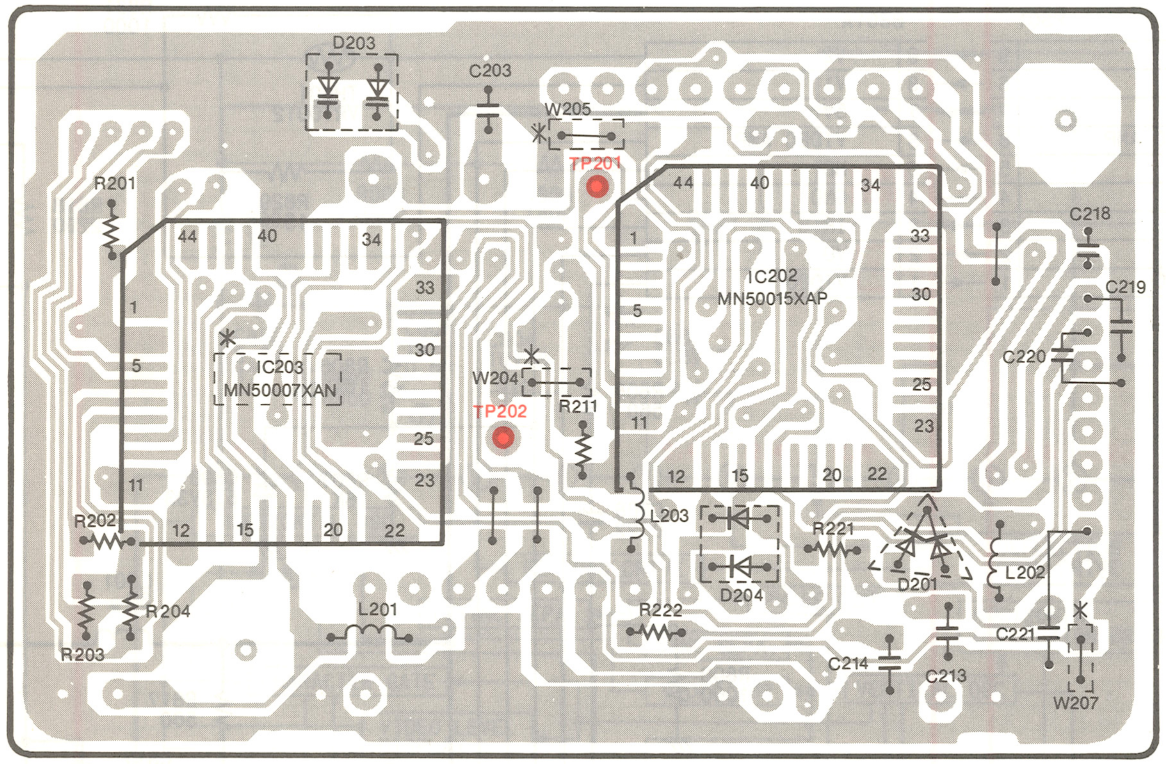
## 3-14. SENSOR (1) (VEP22065B) & SENSOR (2) (VEP20227A) CIRCUIT BOARDS

SENSOR (1) C.B.A. (VEP22065B) (COMPONENT SIDE)


B202
C216
C206
PLL FREQ. ADJ.
TP201
IC204 DN8700
BA201
C215
R214
D206
IC201 MN50010XAW
D202
R212
R213
Q201
R206
R220
C209
C202
R205
R215
R216
TP202
R207
IC205 AN1358S
R209
C208
D205
R218
R219
R210
B201
L212
R208
L204
R217
C204
C211
C212
C205
C210
C207
C201

(COMPONENT SIDE)

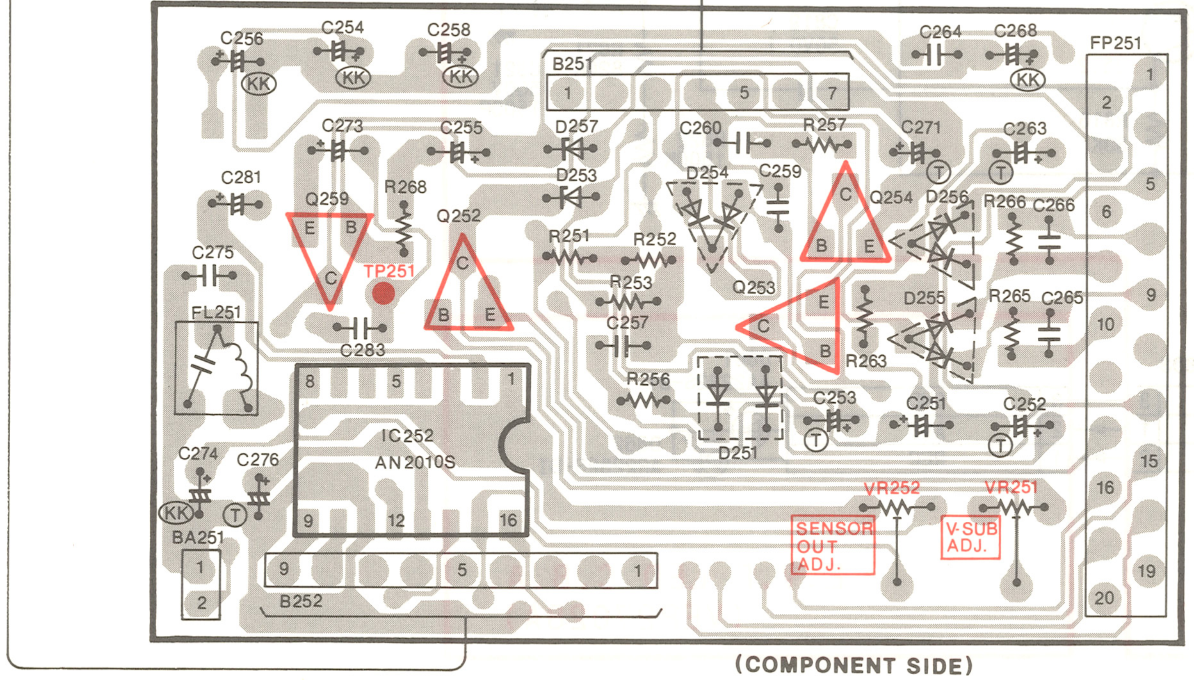
SENSOR (1) C.B.A. (VEP22065B) (FOIL SIDE)


D203
C203
W205
TP201
R201
IC203 MN50007XAN
IC202 MN50015XAP
C218
C219
C220
W204
TP202
R211
L203
R202
D204
R221
D201
L202
R204
L201
R222
R203
C214
C213
C221
W207

(FOIL SIDE)

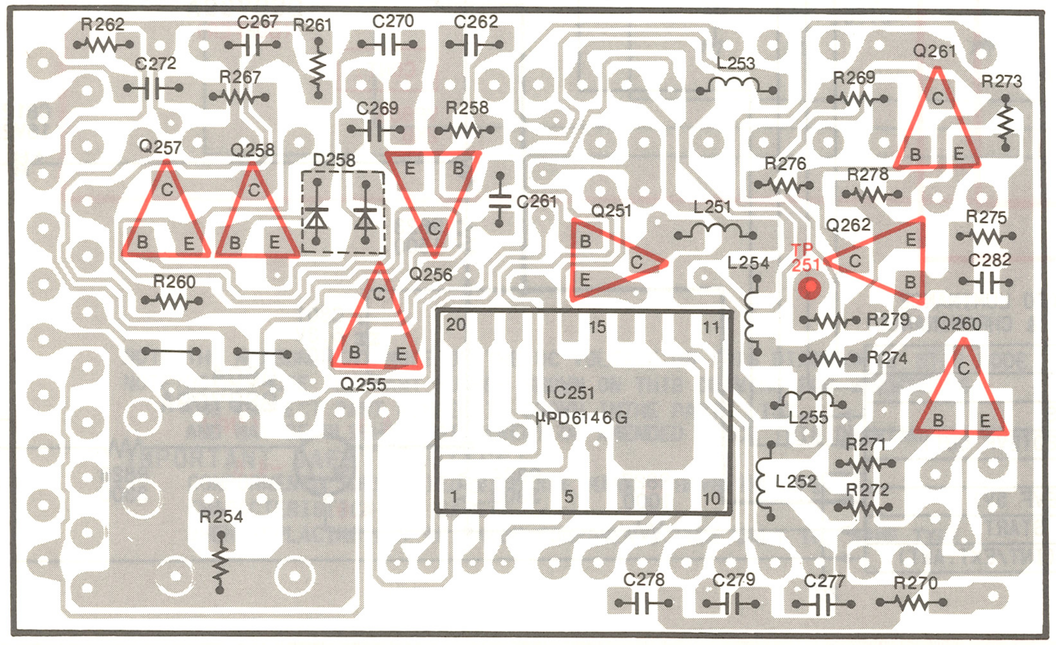
*NOTE: THESE PARTS ARE PERFORMED
FOR CCD SCRATCH COMPENSATION
(THEY ARE NOT NECESSARY
FOR ALL CCD)
IC203 & IC204 ARE USED ...W207-OPEN
IC203 & IC204 ARE NOT USED ...W207-SHORT

SENSOR (2) C.B.A. (VEP20227A)
(COMPONENT SIDE)


C256
C254
C258
B251
C264
C268
FP251
C273
C255
D257
C260
R257
C271
C263
C281
R268
D253
D254
C259
Q254
D256
R266
C266
Q259
Q252
R251
R252
C275
TP251
R253
Q253
D255
R265
C265
FL251
C283
C257
R263
R256
IC252 AN2010S
D251
C253
C251
C252
C274
C276
BA251
VR252
VR251
SENSOR OUT ADJ.
V-SUB ADJ.
B252

(COMPONENT SIDE)

SENSOR (2) C.B.A. (VEP20227A) (FOIL SIDE)


R262
C267
R261
C270
C262
C272
R267
L253
R269
Q261
R273
C269
R258
Q257
Q258
D258
R276
R278
C261
Q251
L251
R275
Q262
L254
TP 251
C282
R260
Q256
R279
Q260
IC251 μPD6146G
R274
Q255
L255
R271
L252
R272
R254
C278
C279
C277
R270

(FOIL SIDE)

## SENSOR (1) & SENSOR (2) ICs VOLTAGE CHART

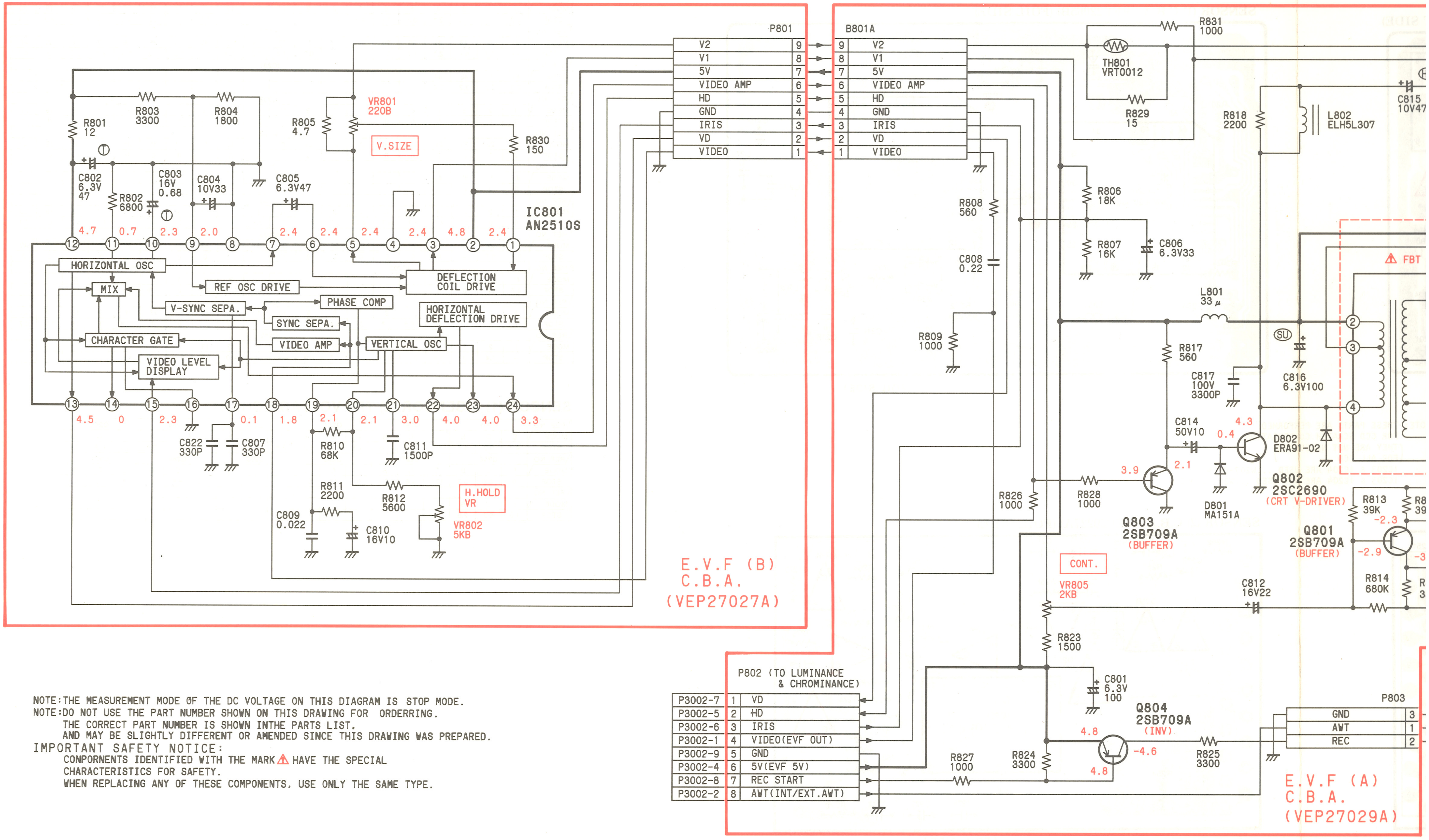
| REF. NO. | IC201 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| STOP | 2.3 | 2.3 | 2.1 | 2.1 | 0.3 | 4.7 | 4.7 | 4.7 | 0 | 0 | — | 0.5 | 0.5 | 0.1 | 0.2 | 0.3 | 4.7 | 0 | 4.3 | 4.4 |
| REF. NO. | IC201 | | | | | | | | | | | | | | | | | | | |
| MODE | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| STOP | 4.7 | 4.7 | 4.7 | 2.1 | 1.7 | 3.7 | 1.0 | 1.7 | 0.9 | 0.9 | 1.2 | 2.0 | 1.5 | 2.3 | 1.3 | 1.5 | 2.1 | 2.2 | 0 | 4.7 |
| REF. NO. | IC201 | | | | | | | | | | | | | | | | | | | |
| MODE | 41 | 42 | 43 | 44 | | | | | | | | | | | | | | | | |
| STOP | 2.3 | 2.2 | 2.2 | 2.4 | | | | | | | | | | | | | | | | |
| REF. NO. | IC202 | | | | | | | | | | | | | | | | | | | |
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| STOP | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0.3 | 4.7 | 2.2 | 0 | 0 | 0 | 4.7 | 0 | 0 | 0 |
| REF. NO. | IC202 | | | | | | | | | | | | | | | | | | | |
| MODE | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| STOP | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4.7 | 0 | 0 |
| REF. NO. | IC202 | | | | | | | | | | | | | | | | | | | |
| MODE | 41 | 42 | 43 | 44 | | | | | | | | | | | | | | | | |
| STOP | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | |
| REF. NO. | IC203 | | | | | | | | | | | | | | | | | | | |
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| STOP | 0 | 0 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.5 | 0 | 4.5 | 0 | 0 | 0 | — | 0 | 4.7 | 4.7 | 0 | 0.1 |
| REF. NO. | IC203 | | | | | | | | | | | | | | | | | | | |
| MODE | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| STOP | 0.3 | 0.5 | — | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| REF. NO. | IC203 | | | | | | | | | | IC205 | | | | | | | | | |
| MODE | 41 | 42 | 43 | 44 | | | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | |
| STOP | 4.7 | 0 | 0 | 0 | | | | | | | 2.1 | 2.1 | 2.1 | 0 | 1.0 | 0.9 | 3.5 | 4.7 | | |
| REF. NO. | IC251 | | | | | | | | | | | | | | | | | | | |
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| STOP | −7.1 | −6.7 | 1.1 | 0 | −6.5 | 4.7 | 0 | 4.4 | 4.7 | 4.4 | 0.3 | 4.7 | 0.2 | 0 | 0 | 12.0 | 0 | 0.8 | 1.1 | 0.7 |
| REF. NO. | IC252 | | | | | | | | | | | | | | | | | | | |
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | | | | |
| STOP | — | 7.4 | 0 | 5.4 | 0.3 | 0.3 | 0.3 | 4.7 | 0.9 | 0.9 | 0 | 6.0 | 8.8 | 5.4 | 4.7 | 5.6 | | | | |

## SENSOR (1) & SENSOR (2) TRs VOLTAGE CHART

| REF. NO. | Q201 | | | Q251 | | | Q251 | | | Q253 | | | Q254 | | | Q255 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B |
| STOP | 4.7 | 0.2 | 4.7 | 1.1 | 4.7 | 1.6 | 5.0 | 15.4 | 5.5 | 8.8 | 4.7 | 8.7 | 0 | 4.7 | 0.3 | 8.8 | 4.8 | 8.6 |
| REF. NO. | Q256 | | | Q257 | | | Q258 | | | Q259 | | | Q260 | | | Q261 | | |
| MODE | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B |
| STOP | 0 | 4.8 | 0.2 | 12.0 | 4.6 | 12.4 | 0 | 4.6 | 0.2 | 8.1 | 15.4 | 8.7 | 5.0 | 8.8 | 5.7 | 6.4 | 8.8 | 6.8 |
| REF. NO. | Q262 | | | | | | | | | | | | | | | | | |
| MODE | E | C | B | | | | | | | | | | | | | | | |
| STOP | 1.9 | 6.8 | 2.6 | | | | | | | | | | | | | | | |

Next Page:
E.V.F (A) · (B) Section

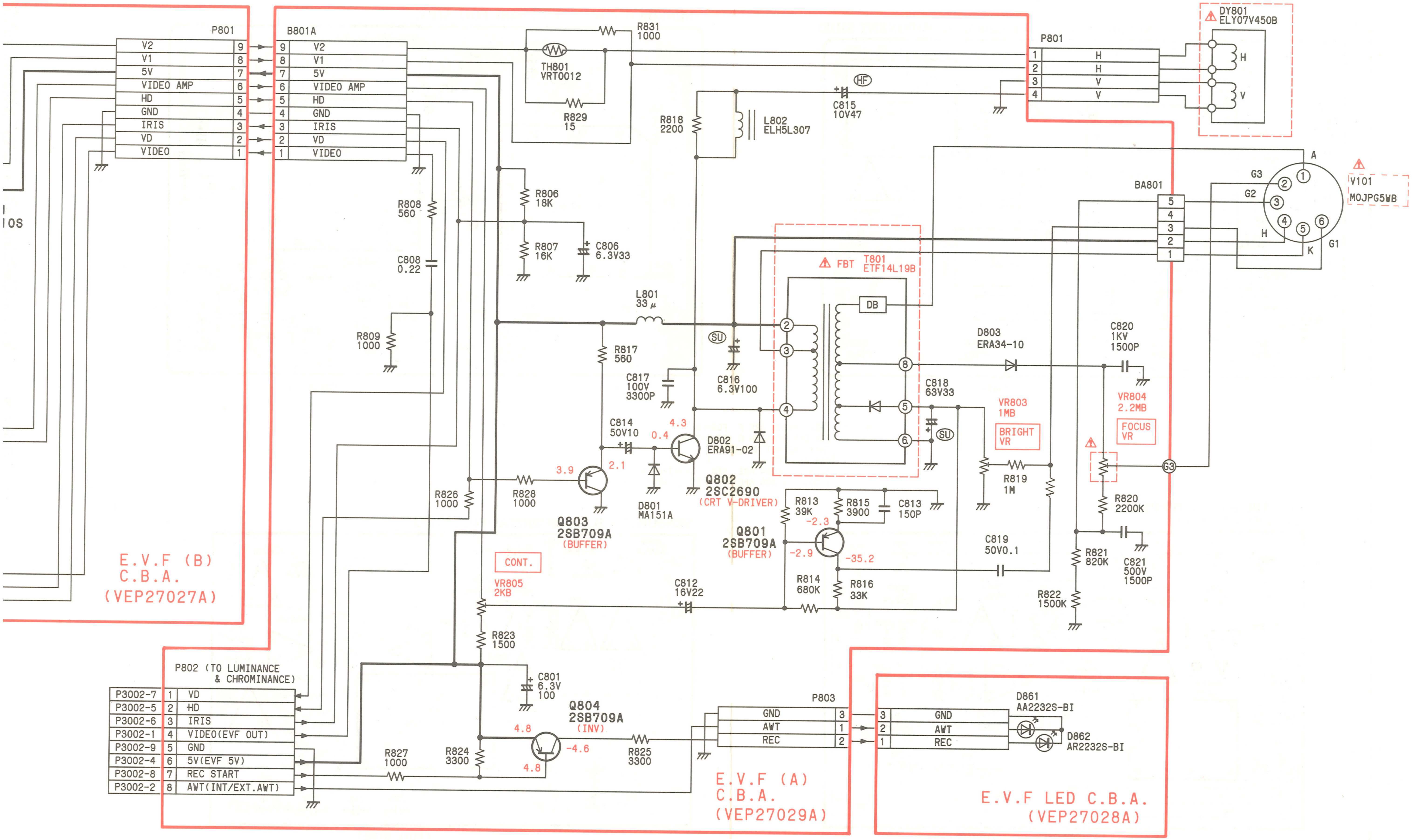
# 3-15. E.V.F (A) & E.V.F (B) SCHEMATIC DIAGRAM


P801
V2
V1
5V
VIDEO AMP
HD
GND
IRIS
VD
VIDEO
B801A
R831 1000
TH801 VRT0012
R829 15
R818 2200
L802 ELH5L307
C815 10V47
R801 12
R803 3300
R804 1800
R805 4.7
VR801 220B
V.SIZE
R830 150
C802 6.3V 47
R802 6800
C803 16V 0.68
C804 10V33
C805 6.3V47
IC801 AN2510S
HORIZONTAL OSC
MIX
REF OSC DRIVE
DEFLECTION COIL DRIVE
PHASE COMP
V-SYNC SEPA.
SYNC SEPA.
HORIZONTAL DEFLECTION DRIVE
CHARACTER GATE
VIDEO AMP
VERTICAL OSC
VIDEO LEVEL DISPLAY
C822 330P
C807 330P
R810 68K
C811 1500P
R811 2200
R812 5600
C809 0.022
C810 16V10
H.HOLD VR
VR802 5KB
E.V.F (B) C.B.A. (VEP27027A)
R806 18K
R807 16K
C806 6.3V33
R808 560
C808 0.22
R809 1000
L801 33 µ
FBT
SU
R817 560
C817 100V 3300P
C816 6.3V100
C814 50V10
D802 ERA91-02
Q802 2SC2690 (CRT V-DRIVER)
R826 1000
R828 1000
Q803 2SB709A (BUFFER)
D801 MA151A
R813 39K
Q801 2SB709A (BUFFER)
CONT.
VR805 2KB
C812 16V22
R814 680K
R823 1500
C801 6.3V 100
Q804 2SB709A (INV)
R825 3300
R827 1000
R824 3300
P802 (TO LUMINANCE & CHROMINANCE)
P3002-7 1 VD
P3002-5 2 HD
P3002-6 3 IRIS
P3002-1 4 VIDEO(EVF OUT)
P3002-9 5 GND
P3002-4 6 5V(EVF 5V)
P3002-8 7 REC START
P3002-2 8 AWT(INT/EXT.AWT)
P803
GND 3
AWT 1
REC 2
E.V.F (A) C.B.A. (VEP27029A)

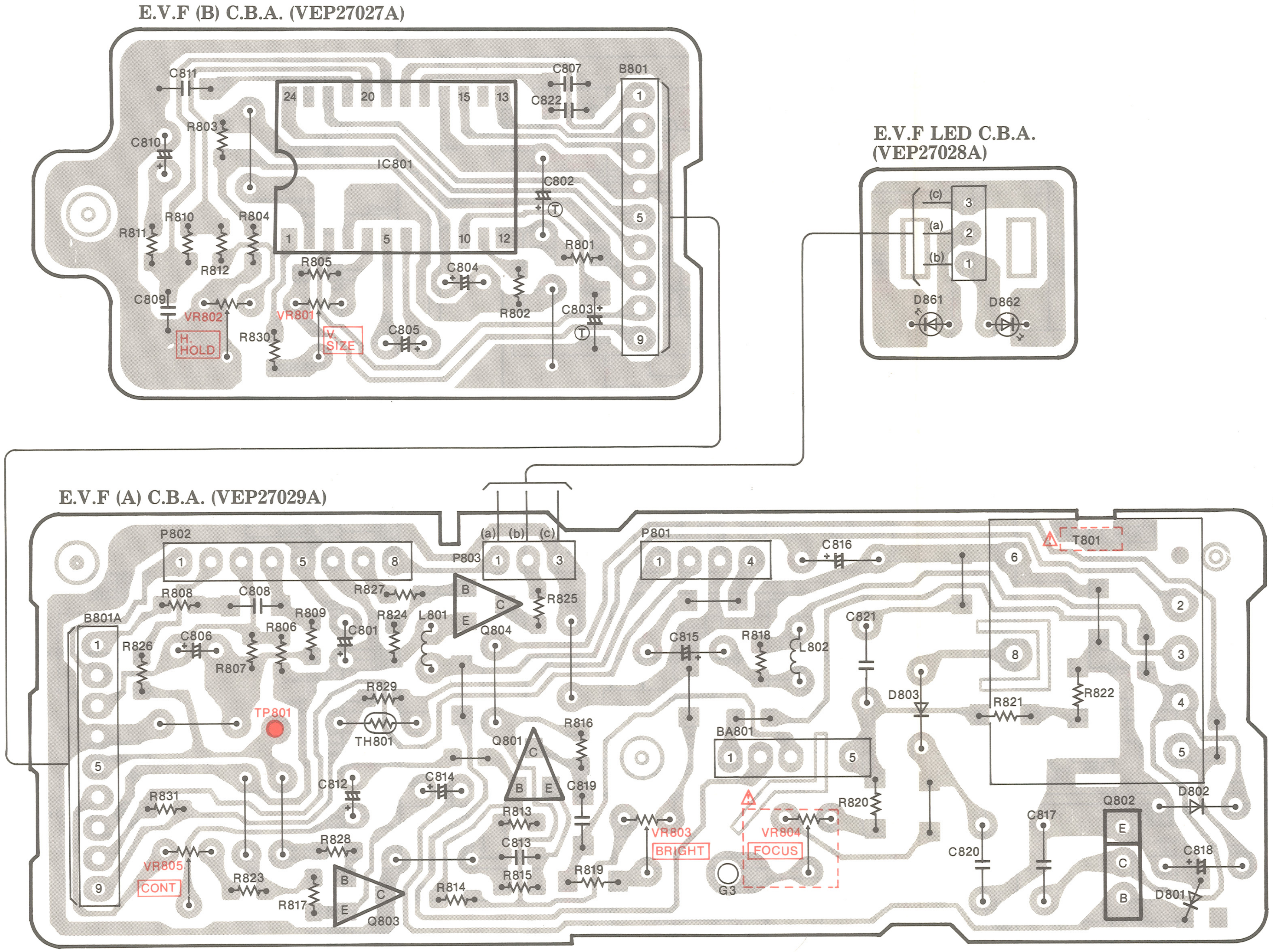
NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERRING.
THE CORRECT PART NUMBER IS SHOWN INTHE PARTS LIST,
AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

IMPORTANT SAFETY NOTICE:
CONPORNENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL
CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.


P801
V2
V1
5V
VIDEO AMP
HD
GND
IRIS
VD
VIDEO
IOS
B801A
R831
1000
TH801
VRT0012
R829
15
P801
H
H
V
V
DY801
ELY07V450B
H
V
HF
C815
10V47
R818
2200
L802
ELH5L307
A
G3
G2
V101
M0JPG5WB
BA801
5
4
3
2
1
H
K
G1
R806
18K
R808
560
R807
16K
C806
6.3V33
C808
0.22
FBT T801
ETF14L19B
DB
L801
33 μ
R809
1000
SU
R817
560
C817
100V
3300P
C816
6.3V100
D803
ERA34-10
C820
1KV
1500P
C818
63V33
VR803
1MB
BRIGHT
VR
VR804
2.2MB
FOCUS
VR
C814
50V10
4.3
0.4
D802
ERA91-02
SU
R819
1M
3.9
2.1
D801
MA151A
Q802
2SC2690
(CRT V-DRIVER)
R826
1000
R828
1000
Q803
2SB709A
(BUFFER)
R813
39K
R815
3900
C813
150P
R820
2200K
-2.3
Q801
2SB709A
(BUFFER)
-2.9
-35.2
C819
50V0.1
R821
820K
C821
500V
1500P
CONT.
VR805
2KB
C812
16V22
R814
680K
R816
33K
R822
1500K
R823
1500
E.V.F (B)
C.B.A.
(VEP27027A)
P802 (TO LUMINANCE
& CHROMINANCE)
C801
6.3V
100
Q804
2SB709A
(INV)
P3002-7
1
VD
P3002-5
2
HD
P3002-6
3
IRIS
P3002-1
4
VIDEO(EVF OUT)
P3002-9
5
GND
P3002-4
6
5V(EVF 5V)
P3002-8
7
REC START
P3002-2
8
AWT(INT/EXT.AWT)
4.8
-4.6
4.8
R827
1000
R824
3300
R825
3300
P803
GND
AWT
REC
3
1
2
D861
AA2232S-BI
D862
AR2232S-BI
E.V.F (A)
C.B.A.
(VEP27029A)
E.V.F LED C.B.A.
(VEP27028A)

# 3-16. E.V.F (A) (VEP27029A) & E.V.F (B) (VEP27027A) CIRCUIT BOARDS


E.V.F (B) C.B.A. (VEP27027A)
C811
C810
R803
IC801
24
20
15
13
1
5
10
12
C807
C822
B801
C802
R811
R810
R804
R812
R805
C804
R801
R802
C809
VR802
VR801
H. HOLD
R830
V. SIZE
C805
C803
E.V.F LED C.B.A. (VEP27028A)
(c)
(a)
(b)
3
2
1
D861
D862
E.V.F (A) C.B.A. (VEP27029A)
P802
P803
(a)
(b)
(c)
P801
C816
T801
R808
C808
R827
R825
B801A
R826
C806
R807
R809
R806
C801
R824
L801
Q804
R829
TP801
TH801
C815
R818
L802
C821
D803
R821
R822
Q801
R816
BA801
C819
C812
C814
R813
C813
R815
R831
VR805
CONT
R828
R823
R817
Q803
R814
R819
VR803
BRIGHT
VR804
FOCUS
G3
R820
C817
C820
Q802
D802
C818
D801

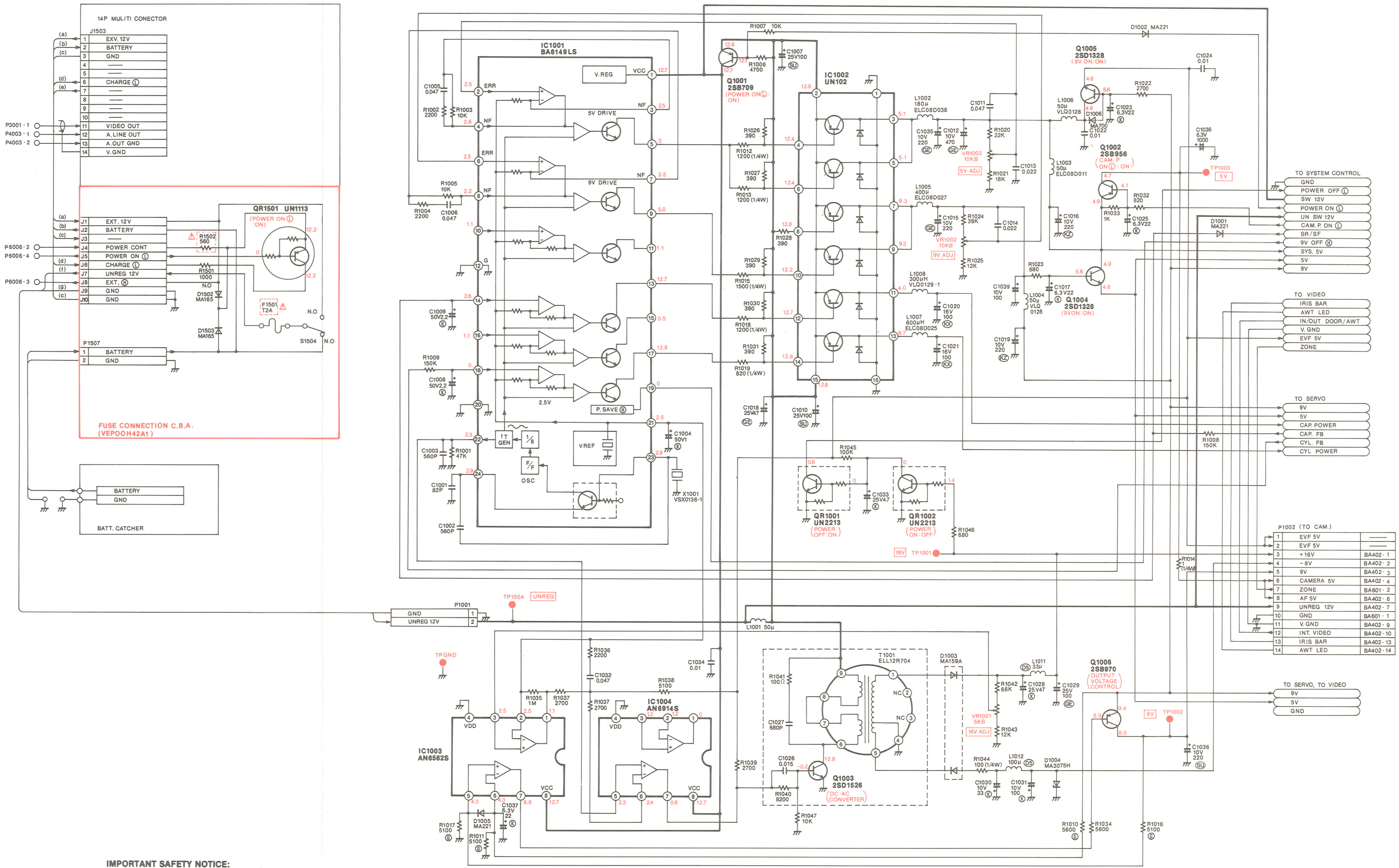
## E.V.F (A) & E.V.F (B) ICs VOLTAGE CHART

| REF. NO. | IC801 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| STOP | 2.4 | 4.8 | 2.4 | 0 | 2.4 | 2.4 | 2.4 | 0 | 2.0 | 2.3 | 0.7 | 4.7 | 4.5 | 0 | 2.3 | 0 | 0.1 | 1.8 | 2.1 | 2.1 |
| REF. NO. | IC801 | | | | | | | | | | | | | | | | | | | |
| MODE | 21 | 22 | 23 | 24 | | | | | | | | | | | | | | | | |
| STOP | 3.0 | 4.0 | 4.0 | 3.3 | | | | | | | | | | | | | | | | |

## E.V.F (A) & E.V.F (B) TRs VOLTAGE CHART

| REF. NO. | Q801 | | | Q802 | | | Q803 | | | Q804 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | E | C | B | E | C | B | E | C | B | E | C | B |
| STOP | −2.3 | −35.2 | −2.9 | 0 | 4.3 | 0.4 | 2.1 | 0 | 3.9 | 4.8 | −4.6 | 4.8 |

# 3-17. POWER SUPPLY SCHEMATIC DIAGRAM



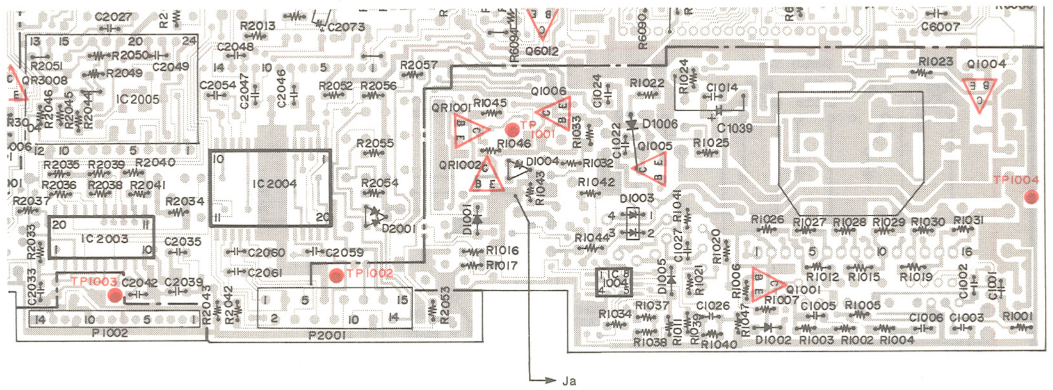
14P MULITI CONECTOR
J1503
EXV. 12V
BATTERY
GND
CHARGE Ⓛ
VIDEO OUT
A. LINE OUT
A. OUT GND
V. GND
P3001 · 1
P4003 · 1
P4003 · 2
QR1501 UN1113
(POWER ON Ⓛ :ON)
R1502 560
EXT. 12V
POWER CONT
POWER ON Ⓛ
CHARGE Ⓛ
UNREG 12V
EXT. Ⓗ
R1501 1000
D1502 MA165
F1501 T2A
D1503 MA165
S1504
P6006 · 2
P6006 · 4
P6006 · 3
P1507
FUSE CONNECTION C.B.A. (VEPOOH42A1)
BATT. CATCHER
IC1001 BA6149LS
V. REG
VCC
ERR
NF
5V DRIVE
9V DRIVE
P. SAVE Ⓗ
2.5V
f T GEN
1/8
F/F
OSC
VREF
X1001 VSX0136-1
C1004 50V1
C1005 0.047
R1002 2200
R1003 10K
R1005 10K
R1004 2200
C1006 0.047
C1009 50V2.2
R1009 150K
C1008 50V2.2
C1003 560P
R1001 47K
C1001 82P
C1002 560P
R1007 10K
Q1001 2SB709 (POWER ON Ⓛ : ON)
R1006 4700
C1007 25V100
IC1002 UN102
R1026 390
R1012 1200 (1/4W)
R1027 390
R1013 1200 (1/4W)
R1028 390
R1029 390
R1015 1500 (1/4W)
R1030 390
R1018 1200 (1/4W)
R1031 390
R1019 820 (1/4W)
C1018 25V47
C1010 25V100
L1002 180µ ELC08D038
C1011 0.047
C1035 10V 220
C1012 10V 470
VR1003 10KB
5V ADJ
R1020 22K
R1021 18K
C1013 0.022
L1005 400µ ELC08D027
C1015 10V 220
R1024 39K
VR1002 10KB
9V ADJ
C1014 0.022
R1025 12K
L1008 300µH VLQ0129-1
C1020 16V 100
L1007 600µH ELC08D025
C1021 16V 100
D1002 MA221
Q1005 2SD1328 (9V ON : ON)
L1006 50µ VLQ0128
D1006 MA700
C1022 0.01
C1023 6.3V22
R1022 2700
C1024 0.01
Q1002 2SB956 (CAM. P ON Ⓛ : ON)
L1003 50µ ELC08D011
R1032 820
R1033 1K
C1025 6.3V22
C1016 10V 220
C1038 6.3V 1000
TP1003 5V
D1001 MA221
C1039 10V 100
L1004 50µ VLQ 0128
C1017 6.3V22
Q1004 2SD1328 (9V ON : ON)
R1023 680
C1019 10V 220
TO SYSTEM CONTROL
GND
POWER OFF Ⓛ
SW 12V
POWER ON Ⓛ
UN SW 12V
CAM. P ON Ⓛ
SR/SF
9V OFF Ⓗ
SYS. 5V
5V
9V
TO VIDEO
IRIS BAR
AWT LED
IN/OUT DOOR/AWT
V. GND
EVF 5V
ZONE
TO SERVO
9V
5V
CAP. POWER
CAP. FB
CYL. FB
CYL. POWER
R1008 150K
R1045 100K
QR1001 UN2213 (POWER OFF : ON)
C1033 25V47
QR1002 UN2213 (POWER ON : OFF)
R1046 680
16V TP1001
P1002 (TO CAM.)
EVF 5V
EVF 5V
+16V
-8V
9V
CAMERA 5V
ZONE
AF 5V
UNREG 12V
GND
V. GND
INT. VIDEO
IRIS BAR
AWT LED
BA402 · 1
BA402 · 2
BA402 · 3
BA402 · 4
BA601 · 2
BA402 · 6
BA402 · 7
BA601 · 1
BA402 · 9
BA402 · 10
BA402 · 13
BA402 · 14
R1014 1 (1/4W)
P1001
GND
UNREG 12V
TP1004 UNREG
L1001 50µ
TPGND
R1036 2200
C1032 0.047
C1034 0.01
R1035 1M
R1037 2700
R1038 5100
R1037 2700
IC1004 AN6914S
IC1003 AN6562S
VDD
VCC
R1017 5100
D1005 MA221
R1011 5100
C1037 6.3V 22
R1039 2700
T1001 ELL12R704
R1041 100Ω
C1027 680P
C1026 0.015
R1040 8200
Q1003 2SD1526 (DC-AC CONVERTER)
R1047 10K
D1003 MA159A
R1042 68K
L1011 33µ
C1028 25V47
C1029 25V 100
VR1001 5KB
16V ADJ
R1043 12K
R1044 100 (1/4W)
L1012 100µ
D1004 MA3075H
C1030 10V 33
C1031 10V 100
Q1006 2SB970 (OUTPUT VOLTAGE CONTROL)
9V TP1002
C1036 10V 220
TO SERVO, TO VIDEO
9V
5V
GND
R1010 5600
R1034 5600
R1016 5100

**IMPORTANT SAFETY NOTICE:**
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

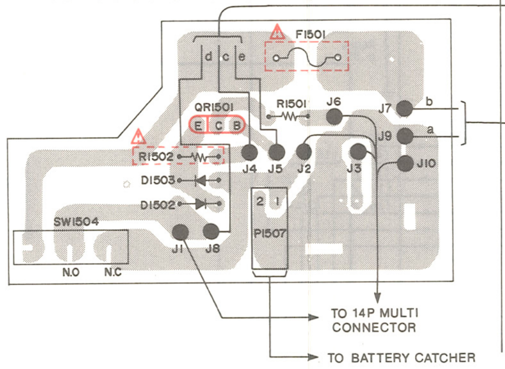
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

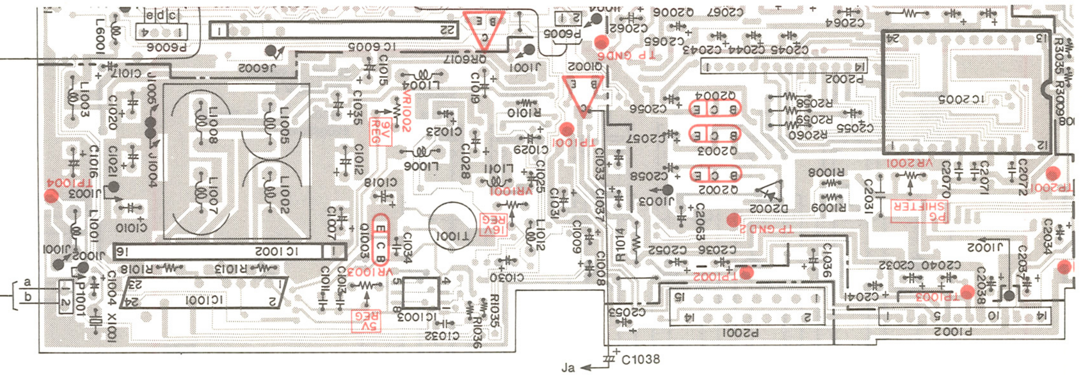
# 3-18. POWER SUPPLY Section In Main Circuit Board (VEP03380B1)


IC2005
IC2004
IC2003
P1002
P2001
TP1003
TP1002
TP1004
Q1004
Ja

(FOIL SIDE)

**FUSE CONNECTION C.B.A. (VEP00H42A1)**


F1501
d
c
e
QR1501
E
C
B
R1501
J6
J7
b
J9
a
J10
R1502
D1503
D1502
J4
J5
J2
J3
2
1
P1507
SW1504
N.O
N.C
J1
J8
TO 14P MULTI CONNECTOR
TO BATTERY CATCHER


IC1001
IC1002
IC1003
IC2002
P1001
P1002
P2002
TP1001
TP1003
Ja
C1038

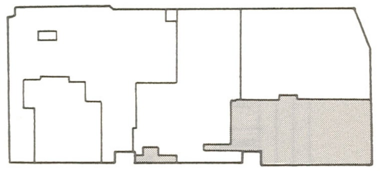
(COMPONENT SIDE)

## POWER SUPPLY Section ICs VOLTAGE CHART

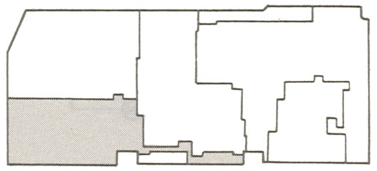
| REF. NO. | IC1001 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| STOP | 12.7 | 2.5 | 2.5 | 2.6 | 0 | 2.5 | 2.5 | 2.2 | 5.0 | 1.1 | 1.1 | 0 | 12.7 | 2.6 | 0.5 | 1.1 | 12.8 | 0 | 0 | 0 |
| REF. NO. | IC1001 | | | | | | | | | | | | | | | | | | | |
| MODE | 21 | 22 | 23 | 24 | | | | | | | | | | | | | | | | |
| STOP | 2.5 | 2.3 | 2.9 | 2.9 | | | | | | | | | | | | | | | | |
| REF. NO. | IC1002 | | | | | | | | | | | | | | | | | | | |
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | | | | |
| STOP | 0 | 12.8 | 5.1 | 12.4 | 5.1 | 12.4 | 9.3 | 12.8 | 9.3 | 12.2 | 4.0 | 12.7 | 6.7 | 12.8 | 12.8 | 0 | | | | |
| REF. NO. | IC1003 | | | | | | | | | | IC1004 | | | | | | | | | |
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | |
| STOP | 1.1 | 2.5 | 2.5 | 0 | 4.3 | 4.3 | 6.6 | 12.7 | | | 0 | 1.2 | 1.2 | 0 | 2.3 | 2.4 | 0.8 | 12.7 | | |

## POWER SUPPLY Section TRs VOLTAGE CHART

| REF. NO. | Q1001 | | | Q1002 | | | Q1003 | | | Q1004 | | | Q1005 | | | Q1006 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B |
| STOP | 12.8 | 12.7 | 12.1 | 4.9 | 4.7 | 4.1 | 0 | 12.8 | −0.2 | 4.8 | 4.9 | 5.6 | 4.9 | 4.9 | 5.6 | 9.4 | 8.9 | 8.9 |
| REF. NO. | QR1001 | | | QR1002 | | | QR1501 | | | | | | | | | | | |
| MODE | E | C | B | E | C | B | E | C | B | | | | | | | | | |
| STOP | 0 | 0.6 | 0 | 0 | 0 | 1.4 | 12.2 | 12.2 | 0 | | | | | | | | | |



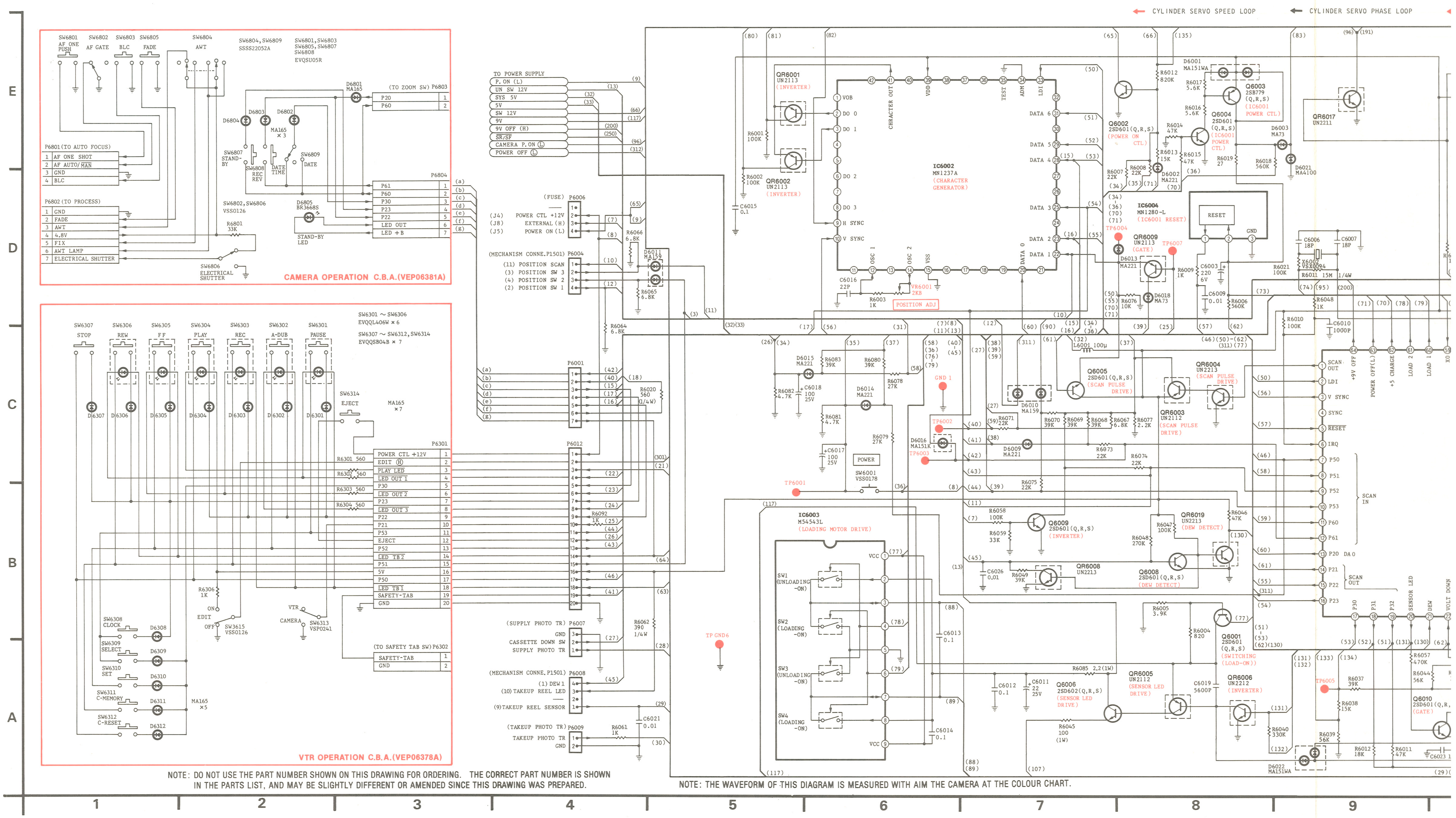
(FOIL SIDE)



(COMPONENT SIDE)

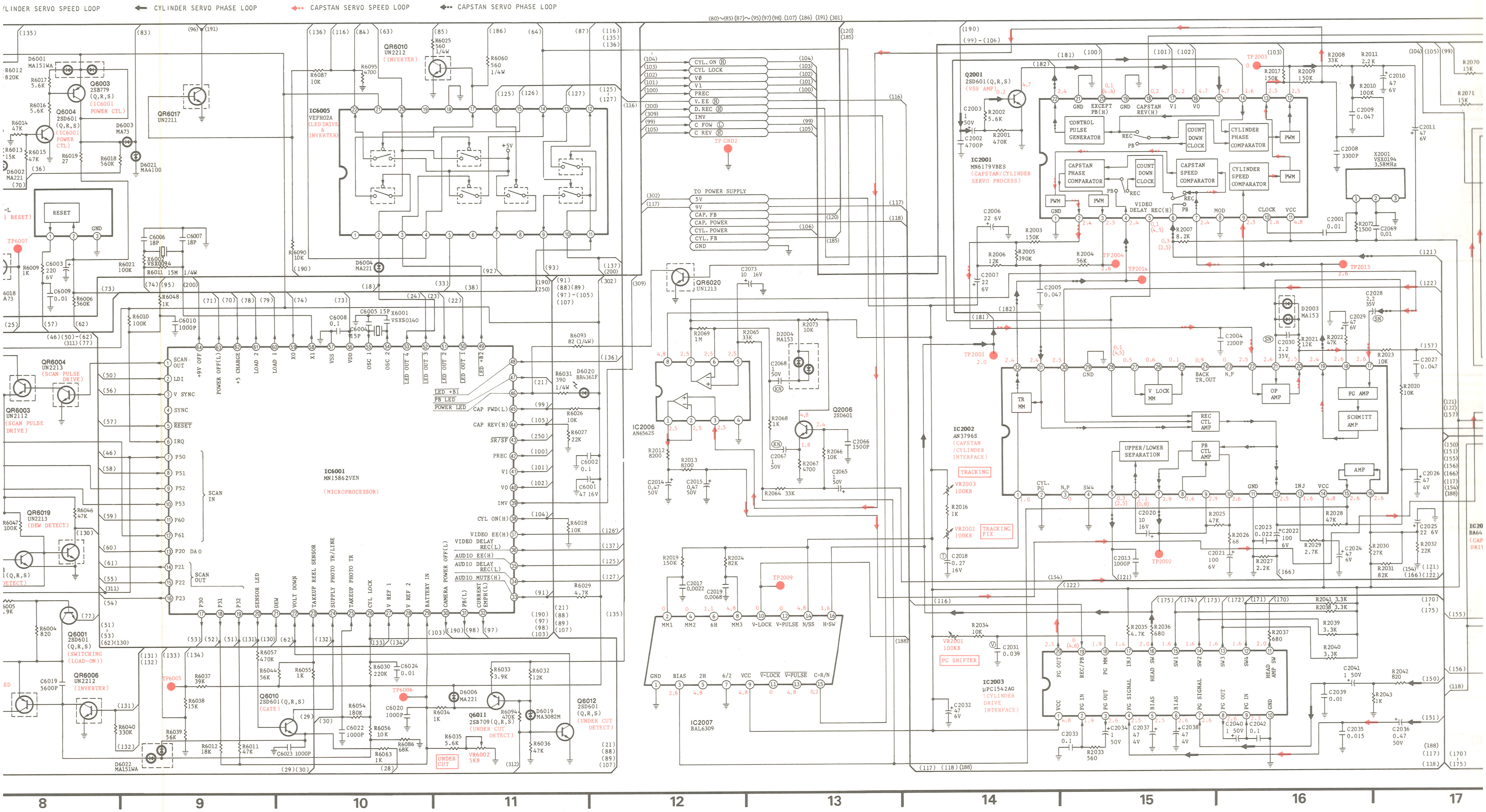
Next Page:
SERVO, SYSTEM CONTROL,
CAMERA OPERATION &
VTR OPERATION Section

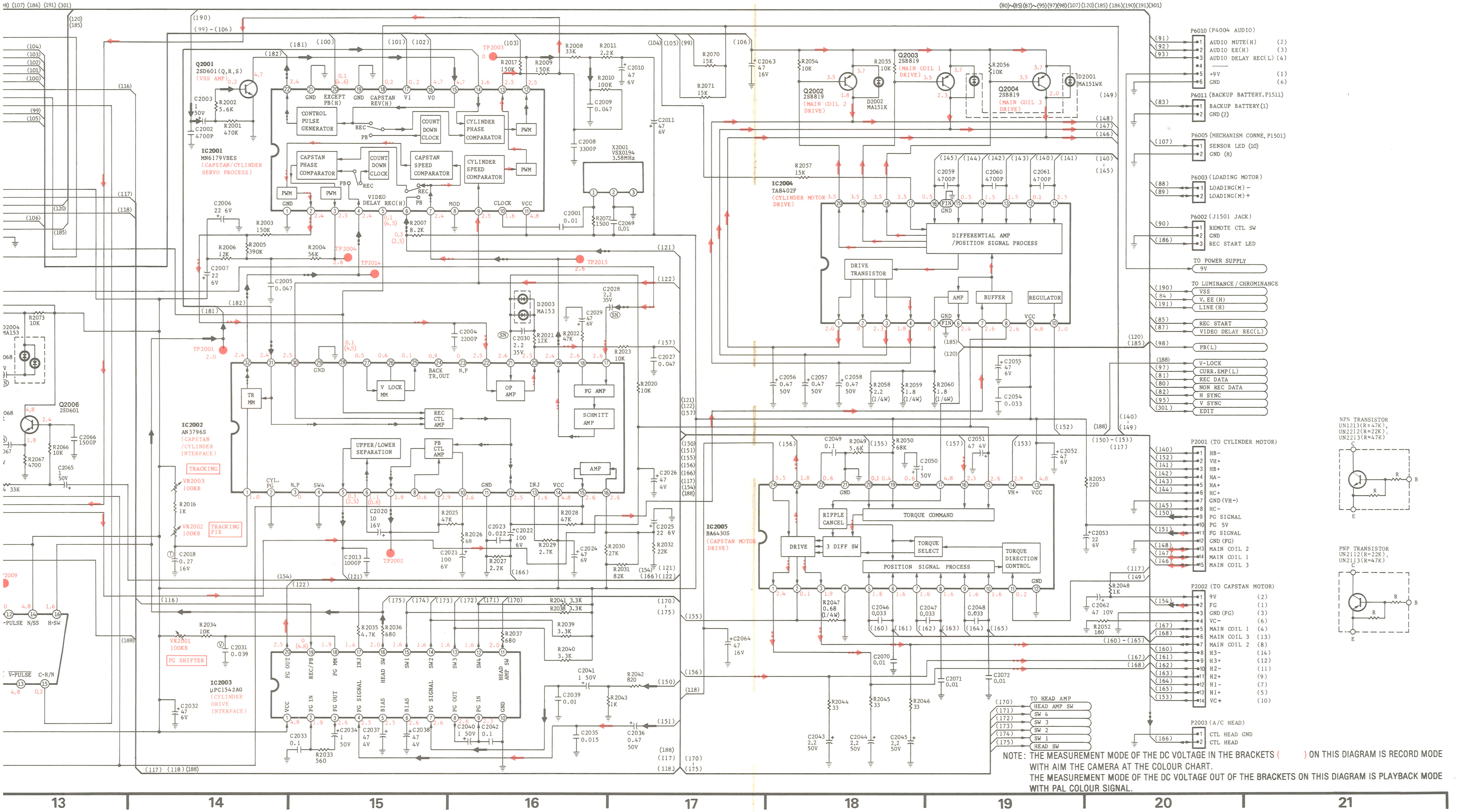
# 3-19. SERVO, SYSTEM CONTROL, CAMERA OPERATION & VTR OPERATION SCHEMATIC DIAGRAM


CYLINDER SERVO SPEED LOOP
CYLINDER SERVO PHASE LOOP
CAMERA OPERATION C.B.A.(VEP06381A)
VTR OPERATION C.B.A.(VEP06378A)
SW6801 AF ONE PUSH
SW6802 AF GATE
SW6803 BLC
SW6805 FADE
SW6804 AWT
SW6804, SW6809 SSSS22052A
SW6801, SW6803 SW6805, SW6807 SW6808 EVQSUO5R
P6801 (TO AUTO FOCUS)
AF ONE SHOT
AF AUTO/MAN
GND
BLC
P6802 (TO PROCESS)
FADE
AWT
4.8V
FIX
AWT LAMP
ELECTRICAL SHUTTER
SW6806 ELECTRICAL SHUTTER
D6801 MA165
(TO ZOOM SW) P6803
SW6807 STAND-BY
SW6808 REC REV
DATE TIME
SW6809 DATE
D6805 BR3668S
STAND-BY LED
R6801 33K
SW6802, SW6806 VSS0126
TO POWER SUPPLY
P. ON (L)
UN SW 12V
SYS 5V
SW 12V
9V OFF (H)
SR/SF
CAMERA P. ON
POWER OFF
(FUSE) P6006
POWER CTL +12V
EXTERNAL (H)
POWER ON (L)
(MECHANISM CONNE. P1501) P6004
POSITION SCAN
POSITION SW 3
POSITION SW 2
POSITION SW 1
SW6307 STOP
SW6306 REW
SW6305 FF
SW6304 PLAY
SW6303 REC
SW6302 A-DUB
SW6301 PAUSE
SW6301 ~ SW6306 EVQQL406W × 6
SW6307 ~ SW6312, SW6314 EVQQSB04B × 7
SW6314 EJECT
MA165 ×7
P6301
POWER CTL +12V
EDIT (H)
PLAY LED
LED OUT 1
LED OUT 2
LED OUT 3
EJECT
LED TB2
LED TB1
SAFETY-TAB
SW6308 CLOCK
SW6309 SELECT
SW6310 SET
SW6311 C-MEMORY
SW6312 C-RESET
MA165 ×5
SW3615 VSS0126
SW6313 VSP0241
(TO SAFETY TAB SW) P6302
(SUPPLY PHOTO TR) P6007
CASSETTE DOWN SW
SUPPLY PHOTO TR
(MECHANISM CONNE. P1501) P6008
(1) DEW 1
(10) TAKEUP REEL LED
(9) TAKEUP REEL SENSOR
(TAKEUP PHOTO TR) P6009
TAKEUP PHOTO TR
IC6002 MN1237A (CHARACTER GENERATOR)
QR6001 UN2113 (INVERTER)
QR6002 UN2113 (INVERTER)
IC6004 MN1280-L (IC6001 RESET)
Q6002 2SD601(Q,R,S) (POWER ON CTL)
Q6003 2SB779 (Q,R,S) (IC6001 POWER CTL)
Q6004 2SD601 (Q,R,S) (IC6001 POWER CTL)
QR6009 UN2113 (GATE)
VR6001 2KB POSITION ADJ
Q6005 2SD601(Q,R,S) (SCAN PULSE DRIVE)
QR6004 UN2213 (SCAN PULSE DRIVE)
QR6003 UN2112 (SCAN PULSE DRIVE)
IC6003 M54543L (LOADING MOTOR DRIVE)
SW1 (UNLOADING-ON)
SW2 (LOADING-ON)
SW3 (UNLOADING-ON)
SW4 (LOADING-ON)
Q6009 2SD601(Q,R,S) (INVERTER)
QR6019 UN2213 (DEW DETECT)
QR6008 UN2213
Q6008 2SD601(Q,R,S) (DEW DETECT)
Q6001 2SD601 (Q,R,S) (SWITCHING (LOAD-ON))
Q6006 2SD602(Q,R,S) (SENSOR LED DRIVE)
QR6005 UN2112 (SENSOR LED DRIVE)
QR6006 UN2212 (INVERTER)
Q6010 2SD601(Q,R,S) (GATE)
QR6017 UN2211
SW6001 VSS0178
POWER
RESET
TP6001
TP6002
TP6003
TP6004
TP6005
TP6007
TP GND6
GND 1
SCAN OUT
SCAN IN
1
2
3
4
5
6
7
8
9
E
D
C
B
A

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

NOTE: THE WAVEFORM OF THIS DIAGRAM IS MEASURED WITH AIM THE CAMERA AT THE COLOUR CHART.


CYLINDER SERVO SPEED LOOP
CYLINDER SERVO PHASE LOOP
CAPSTAN SERVO SPEED LOOP
CAPSTAN SERVO PHASE LOOP
D6001 MA151WA
Q6003 2SB779 (Q,R,S) (IC6001 POWER CTL)
Q6004 2SD601 (Q,R,S) (IC6001 POWER CTL)
D6003 MA73
D6021 MA4100
D6002 MA221
QR6017 UN2211
RESET
TP6007
X6002 VSX0094
QR6010 UN2212 (INVERTER)
IC6005 VEFH02A (LED DRIVE & INVERTER)
D6004 MA221
X6001 VSXS0140
QR6004 UN2213 (SCAN PULSE DRIVE)
QR6003 UN2112 (SCAN PULSE DRIVE)
QR6019 UN2213 (DEW DETECT)
Q6001 2SD601 (Q,R,S) (SWITCHING (LOAD-ON))
Q6006 UN2212 (INVERTER)
D6022 MA151WA
IC6001 MN15862VEN (MICROPROCESSOR)
SCAN OUT
LDI
V SYNC
SYNC
RESET
IRQ
P50
P51
P52
P53
P60
P61
P20 DA 0
P21
P22
P23
SCAN IN
SCAN OUT
+9V OFF
POWER OFF(L)
+5 CHARGE
LOAD 2
LOAD 1
XO
XI
VSS
VDD
OSC 1
OSC 2
LED OUT 4
LED OUT 3
LED OUT 2
LED OUT 1
LED +B2
LED +B1
PB LED
POWER LED
CAP FWD(L)
CAP REV(H)
SR/SF
PREC
V1
V0
IMV
CYL ON(H)
VIDEO EE(H)
VIDEO DELAY REC(L)
AUDIO EE(H)
AUDIO DELAY REC(L)
AUDIO MUTE(H)
P30
P31
P32
SENSOR LED
DEW
VOLT DOWN
TAKEUP REEL SENSOR
SUPPLY PHOTO TR/LINE
TAKEUP PHOTO TR
CYL LOCK
V REF 1
V REF 2
BATTERY IN
CAMERA POWER OFF(L)
PB(L)
CURRENT EMPH(L)
D6020 BR4361F
TP6005
Q6010 2SD601 (Q,R,S) (GATE)
TP6006
D6006 MA221
Q6011 2SB709 (Q,R,S) (UNDER CUT DETECT)
D6019 MA3082M
Q6012 2SD601 (Q,R,S) (UNDER CUT DETECT)
VR6002 5KB
UNDER CUT
CYL. ON (H)
CYL LOCK
V0
V1
PREC
V.EE (H)
D.REC (H)
IMV
C FOW (L)
C REV (H)
TP GND2
TO POWER SUPPLY
5V
9V
CAP. FB
CAP. POWER
CYL. POWER
CYL. FB
GND
QR6020 UN1213
IC2006 AN6562S
D2004 MA153
Q2006 2SD601
TP2009
IC2007 BAL6309
MM1
MM2
6H
MM3
V-LOCK
V-PULSE
N/SS
H-SW
GND
BIAS
2H
6/2
VCC
V-LOCK
V-PULSE
C-R/N
Q2001 2SD601 (Q,R,S) (VSS AMP)
IC2001 MN6179VBES (CAPSTAN/CYLINDER SERVO PROCESS)
GND
EXCEPT PB(H)
CAPSTAN REV(H)
CONTROL PULSE GENERATOR
COUNT DOWN CLOCK
CYLINDER PHASE COMPARATOR
PWM
CAPSTAN PHASE COMPARATOR
CAPSTAN SPEED COMPARATOR
CYLINDER SPEED COMPARATOR
VIDEO REC(H)
MOD
CLOCK
VCC
X2001 VSX0194 3.58MHz
TP2003
TP2004
TP2014
TP2015
TP2001
IC2002 AN3796S (CAPSTAN /CYLINDER INTERFACE)
TRACKING
VR2003 100KB
VR2002 100KB
TRACKING FIX
TR MM
V LOCK MM
BACK TR.OUT
N.P
OP AMP
FG AMP
SCHMITT AMP
REC CTL AMP
UPPER/LOWER SEPARATION
PB CTL AMP
AMP
CYL. PG
SW4
INJ
D2003 MA153
TP2002
VR2001 100KB
PG SHIFTER
IC2003 μPC1542AG (CYLINDER DRIVE INTERFACE)
PG OUT
REC/PB
PG MM
INJ
HEAD SW
SW1
SW2
SW3
SW4
HEAD AMP SW
VCC
FG IN
FG OUT
FG SIGNAL
BIAS
PG SIGNAL
PG OUT
PG IN
GND
8
9
10
11
12
13
14
15
16
17


Q2001
2SD601(Q,R,S)
(VSS AMP)
IC2001
MN6179VBES
(CAPSTAN/CYLINDER SERVO PROCESS)
CONTROL PULSE GENERATOR
COUNT DOWN CLOCK
CYLINDER PHASE COMPARATOR
CAPSTAN PHASE COMPARATOR
CAPSTAN SPEED COMPARATOR
CYLINDER SPEED COMPARATOR
PWM
X2001
VSX0194
3.58MHz
TP2003
TP2004
TP2014
TP2015
TP2001
TP2002
TP2009
IC2002
AN3796S
(CAPSTAN /CYLINDER INTERFACE)
TRACKING
VR2003 100KB
VR2002 100KB
TRACKING FIX
TR MM
V LOCK MM
OP AMP
FG AMP
SCHMITT AMP
REC CTL AMP
PB CTL AMP
UPPER/LOWER SEPARATION
AMP
D2003
MA153
Q2006
2SD601
IC2003
μPC1542AG
(CYLINDER DRIVE INTERFACE)
VR2001 100KB
PG SHIFTER
Q2002
2SB819
(MAIN COIL 2 DRIVE)
Q2003
2SB819
(MAIN COIL 1 DRIVE)
Q2004
2SB819
(MAIN COIL 3 DRIVE)
D2001
MA151WK
D2002
MA151K
IC2004
TA8402F
(CYLINDER MOTOR DRIVE)
DIFFERENTIAL AMP /POSITION SIGNAL PROCESS
DRIVE TRANSISTOR
AMP
BUFFER
REGULATOR
IC2005
BA6430S
(CAPSTAN MOTOR DRIVE)
RIPPLE CANCEL
TORQUE COMMAND
DRIVE
3 DIFF SW
TORQUE SELECT
TORQUE DIRECTION CONTROL
POSITION SIGNAL PROCESS
P6010 (P4004 AUDIO)
AUDIO MUTE(H)
AUDIO EE(H)
AUDIO DELAY REC(L)
+9V
GND
P6011 (BACKUP BATTERY.P1511)
BACKUP BATTERY(1)
GND(2)
P6005 (MECHANISM CONNE. P1501)
SENSOR LED (10)
GND (8)
P6003 (LOADING MOTOR)
LOADING(M)−
LOADING(M)+
P6002 (J1501 JACK)
REMOTE CTL SW
GND
REC START LED
TO POWER SUPPLY
9V
TO LUMINANCE / CHROMINANCE
VSS
V. EE (H)
LINE (H)
REC START
VIDEO DELAY REC(L)
PB(L)
V-LOCK
CURR.EMP(L)
REC DATA
NON REC DATA
H SYNC
V SYNC
EDIT
P2001 (TO CYLINDER MOTOR)
HB−
VH+
HB+
HA−
HA+
HC+
GND (VH−)
HC−
PG SIGNAL
PG 5V
FG SIGNAL
GND (FG)
MAIN COIL 2
MAIN COIL 1
MAIN COIL 3
P2002 (TO CAPSTAN MOTOR)
9V
FG
GND (FG)
VC−
MAIN COIL 1
MAIN COIL 3
MAIN COIL 2
H3−
H3+
H2−
H2+
H1−
H1+
VC+
TO HEAD AMP
HEAD AMP SW
SW 4
SW 3
SW 2
SW 1
HEAD SW
P2003 (A/C HEAD)
CTL HEAD GND
CTL HEAD
NPN TRANSISTOR
UN1213(R=47K),
UN2212(R=22K),
UN2213(R=47K)
PNP TRANSISTOR
UN2112(R=22K),
UN2113(R=47K)
13
14
15
16
17
18
19
20
21

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE WITH AIM THE CAMERA AT THE COLOUR CHART.
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL.

## SERVO & SYSTEM CONTROL SCHEMATIC

| Transistor | |
|---|---|
| Q2001 | E-14 |
| Q2002 | E-18 |
| Q2003 | E-18 |
| Q2004 | E-19 |
| Q2006 | C-13 |
| Q6001 | B-8 |
| Q6002 | E-7 |
| Q6003 | E-8 |
| Q6004 | E-8 |
| Q6005 | C-7 |
| Q6006 | A-7 |
| Q6008 | B-8 |
| Q6009 | B-7 |
| Q6010 | A-9 |
| Q6011 | A-11 |
| Q6012 | A-11 |

| Transistor & Resistor | |
|---|---|
| QR6001 | E-5 |
| QR6002 | D-5 |
| QR6003 | C-8 |
| QR6004 | C-8 |
| QR6005 | A-8 |
| QR6006 | A-8 |
| QR6008 | B-7 |
| QR6009 | D-8 |
| QR6010 | E-10 |
| QR6017 | E-9 |
| QR6019 | B-8 |
| QR6020 | D-12 |

| Integrated Circuit | |
|---|---|
| IC2001 | E-14 |
| IC2002 | C-14 |
| IC2003 | A-14 |
| IC2004 | D-18 |
| IC2005 | B-17 |
| IC2006 | C-12 |
| IC2007 | A-12 |
| IC6001 | C-9 |
| IC6002 | E-6 |
| IC6003 | B-6 |
| IC6004 | D-8 |
| IC6005 | E-10 |

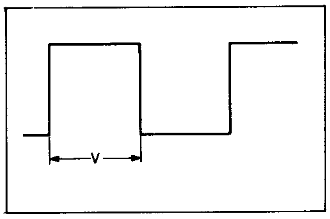
| Test Point | |
|---|---|
| TP2001 | C-14 |
| TP2002 | B-15 |
| TP2003 | E-16 |
| TP2004 | D-15 |
| TP2009 | B-13 |
| TP2014 | D-15 |
| TP2015 | D-16 |
| TP6001 | B-5 |
| TP6002 | C-6 |
| TP6003 | C-6 |
| TP6004 | D-7 |
| TP6005 | A-9 |
| TP6006 | A-10 |
| TP6007 | D-8 |
| TP GND 1 | C-6 |
| TP GND 2 | E-12 |
| TP GND 6 | A-5 |

| Adjustment | |
|---|---|
| VR2001 | A-14 |
| VR2002 | B-14 |
| VR2003 | B-14 |
| VR6001 | D-6 |
| VR6002 | A-11 |

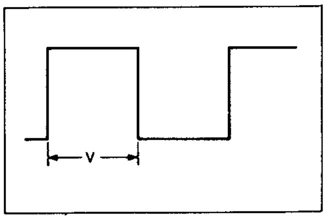
| Connector | |
|---|---|
| P2001 | C-20 |
| P2002 | B-20 |
| P2003 | A-20 |
| P6001 | C-4 |
| P6002 | D-20 |
| P6003 | D-20 |
| P6004 | D-4 |
| P6005 | E-20 |
| P6006 | D-4 |
| P6007 | B-4 |
| P6008 | A-4 |
| P6009 | A-4 |
| P6010 | E-20 |
| P6011 | E-20 |
| P6012 | C-4 |
| P6301 | C-3 |
| P6302 | A-3 |
| P6801 | E-1 |
| P6802 | D-1 |
| P6803 | E-3 |
| P6804 | D-3 |

ADDRESS INFORMATION

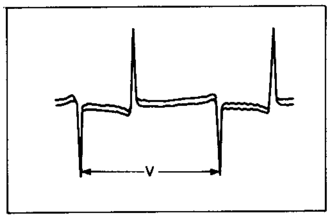
## SERVO CIRCUIT TP (Test Point) WAVE FORM (REF No. 2000 Series)



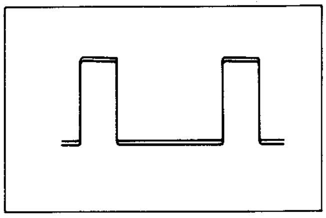
TP2001 REC/PLAY
2V/10msec. div. 4Vp-p



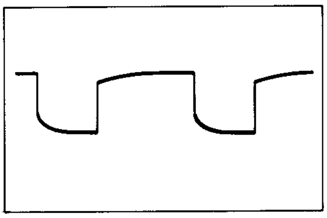
TP2014 REC
2V/10msec. div. 5Vp-p



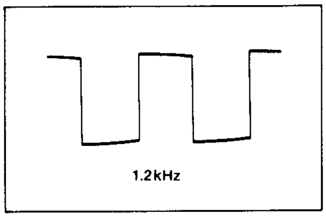
TP2002 PLAY
0.5V/10msec. div. 2.1Vp-p



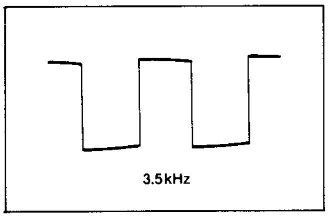
TP2014 PLAY
2V/10msec. div. 5Vp-p



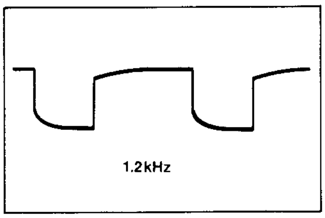
TP2002 REC
2V/10msec. div. 3Vp-p



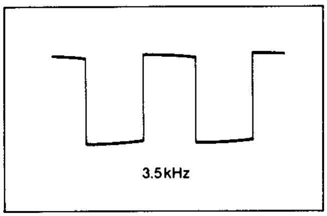
TP2015 PLAY
2V/0.2msec. div. 5Vp-p



TP2003 REC/PLAY
2V/0.1msec. div. 5Vp-p



TP2015 REC
2V/0.2msec. div. 5Vp-p



TP2004 REC/PLAY
2V/0.1msec. div. 5Vp-p

# SYSTEM CONTROL Section ICs VOLTAGE CHART

| REF. NO. | IC6001 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| STOP | 0.1 | 0.2 | 4.7 | 0 | 4.7 | 4.5 | 0 | 0.1 | 0.5 | 0.1 | 0 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.3 | 0.5 | 0.2 | 0 |
| PLAY | 0.1 | 0.2 | 4.7 | 3.5 | 4.7 | 4.8 | 0.7 | 0.7 | 0.1 | 0.1 | 0 | 0.5 | 0.5 | 0.8 | 0.5 | 0.6 | 0.3 | 0 | 0.2 | 0 |
| REC | 0.1 | 0.2 | 4.6 | 3.5 | 4.6 | 4.5 | 0.5 | 0.7 | 0.1 | 0.7 | 0 | 0.4 | 0.4 | 0.8 | 0.6 | 0.7 | 0.3 | 0.6 | 0.3 | 0 |
| F.F | 0.1 | 0.2 | 4.7 | 3.5 | 4.7 | 0 | 0.1 | 0 | 0.5 | 0.1 | 0 | 0.3 | 0.5 | 0.5 | 0.4 | 0.4 | 0.3 | 0.4 | 0.2 | 0.5 |
| REW | 0.1 | 0.2 | 4.7 | 3.5 | 4.7 | 4.5 | 0 | 0 | 0.7 | 0.1 | 0 | 0.6 | 0.4 | 0.5 | 0.4 | 0.4 | 0.3 | 0.6 | 0.2 | 0.5 |

| REF. NO. | IC6001 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| STOP | 0 | 0 | 4.1 | 0.1 | 4.7 | 2.0 | 2.5 | 3.1 | 4.5 | 0.1 | 4.7 | 4.6 | 4.7 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 4.7 |
| PLAY | 0 | 0 | 2.0 | 0.4 | 4.7 | 3.4 | 2.5 | 3.1 | 4.5 | 0.1 | 0.2 | 4.6 | 0.2 | 0.1 | 4.7 | 0.1 | 4.7 | 0 | 0.1 | 4.7 |
| REC | 0 | 0 | 0 | 0 | 0 | 3.4 | 2.5 | 3.1 | 4.2 | 4.6 | 0 | 3.5 | 0.2 | 4.5 | 0.2 | 4.5 | 0.2 | 0 | 0 | 0 |
| F.F | 0 | 0 | 2.0 | 0.4 | 4.7 | 2.0 | 2.5 | 3.1 | 4.3 | 0.1 | 4.7 | 4.6 | 4.7 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| REW | 0 | 0 | 2.0 | 0.4 | 4.7 | 2.0 | 2.5 | 3.1 | 4.3 | 0.1 | 4.7 | 4.6 | 4.7 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 4.7 |

| REF. NO. | IC6001 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| STOP | 0.1 | 4.7 | 4.7 | 0.1 | 0 | 0.4 | 3.5 | 4.8 | 0.2 | 3.4 | 3.4 | 0.1 | 3.7 | 2.2 | 0.1 | 4.7 | 0 | 0 | 2.3 | 0 |
| PLAY | 0.1 | 0.1 | 0.1 | 0.1 | 0 | 0.4 | 0.4 | 4.8 | 4.8 | 0.9 | 0 | 1.0 | 0 | 0 | 2.4 | 4.7 | 0 | 0 | 2.3 | 0 |
| REC | 0 | 0 | 4.6 | 0.2 | 0.2 | 0.5 | 0.4 | 0.3 | 4.8 | 3.3 | 0 | 3.3 | 0.2 | 2.1 | 0 | 4.6 | 0 | 0 | 2.3 | 0 |
| F.F | 4.7 | 0.1 | 4.7 | 0.1 | 0.1 | 0.4 | 3.5 | 4.8 | 0.2 | 3.4 | 0.4 | 1.3 | 3.7 | 2.1 | 2.4 | 4.7 | 0 | 1.4 | 2.3 | 0 |
| REW | 4.7 | 4.7 | 4.7 | 4.6 | 4.7 | 0.1 | 3.5 | 4.8 | 0.2 | 0.4 | 0 | 1.1 | 3.6 | 2.1 | 2.4 | 4.7 | 0 | 1.4 | 2.3 | 0 |

| REF. NO. | IC6001 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | 61 | 62 | 63 | 64 | | | | | | | | | | | | | | | | |
| STOP | 0 | 4.7 | 4.6 | 0 | | | | | | | | | | | | | | | | |
| PLAY | 0 | 4.7 | 4.6 | 0 | | | | | | | | | | | | | | | | |
| REC | 0 | 4.6 | 4.6 | 0 | | | | | | | | | | | | | | | | |
| F.F | 0 | 4.7 | 4.6 | 0 | | | | | | | | | | | | | | | | |
| REW | 0 | 4.7 | 4.6 | 0 | | | | | | | | | | | | | | | | |

| REF. NO. | IC6002 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| STOP | 4.7 | 1.3 | 3.0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 4.7 | 0 | 2.6 | 0 | 2.6 | 0 | 0 | 0 | 0 | 0 | 0.5 |
| PLAY | 4.7 | 1.3 | 3.0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 4.7 | 0 | 2.6 | 0 | 2.6 | 0 | 0 | 0 | 0 | 0 | 0.5 |
| REC | 4.7 | 1.3 | 3.0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 4.7 | 0 | 2.6 | 0 | 2.6 | 0 | 4.8 | 0 | 0 | 0 | 0.5 |
| F.F | 4.7 | 1.3 | 3.0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 4.7 | 0 | 2.6 | 0 | 2.6 | 0 | 4.8 | 0 | 0 | 0 | 0.5 |
| REW | 4.7 | 1.3 | 3.0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 4.7 | 0 | 2.6 | 0 | 2.6 | 0 | 4.8 | 0 | 0 | 0 | 0.5 |

| REF. NO. | IC6002 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| STOP | 0 | 0.9 | 0.6 | 0 | 0.4 | 0 | 4.8 | 0.2 | 0.6 | 0 | 0.2 | 0 | 0.2 | 0 | 0 | 4.7 | 0 | 0 | 4.8 | 0 |
| PLAY | 0 | 0.7 | 0.4 | 0 | 0.4 | 0 | 0 | 0.2 | 0.4 | 0 | 0.2 | 0 | 0.2 | 0 | 0 | 4.8 | 0 | 0 | 4.8 | 0 |
| REC | 0 | 0.7 | 0.6 | 0 | 0.4 | 0 | 4.8 | 0.2 | 0.6 | 0 | 0.2 | 0 | 0.2 | 0 | 0 | 4.8 | 0 | 0 | 4.8 | 0 |
| F.F | 0 | 0.9 | 0.6 | 0 | 0.4 | 0 | 4.8 | 0.2 | 0.6 | 0 | 0.2 | 0 | 0.2 | 0 | 0 | 4.8 | 0 | 0 | 4.8 | 0 |
| REW | 0 | 0.9 | 0.6 | 0 | 0.4 | 0 | 4.8 | 0.2 | 0.6 | 0 | 0.2 | 0 | 0.2 | 0 | 0 | 4.8 | 0 | 0 | 4.8 | 0 |

| REF. NO. | IC6002 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | 41 | 42 | | | | | | | | | | | | | | | | | | |
| STOP | 0 | 0 | | | | | | | | | | | | | | | | | | |
| PLAY | 0 | 0 | | | | | | | | | | | | | | | | | | |
| REC | 0 | 0 | | | | | | | | | | | | | | | | | | |
| F.F | 0 | 0 | | | | | | | | | | | | | | | | | | |
| REW | 0 | 0 | | | | | | | | | | | | | | | | | | |

| REF. NO. | IC6003 | | | | | | | | | | IC6004 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | | 1 | 2 | 3 | | | | | | | |
| STOP | 7.2 | 13.0 | 0.7 | 0 | 0 | 0 | 0.7 | 13.0 | 7.2 | | 4.7 | 4.7 | 0 | | | | | | | |
| PLAY | 7.2 | 13.0 | 0.5 | 0 | 0 | 0 | 0.5 | 13.0 | 7.2 | | 4.7 | 4.7 | 0 | | | | | | | |
| REC | 7.2 | 12.7 | 0.8 | 0 | 0 | 0 | 0.7 | 12.7 | 7.2 | | 4.6 | 4.6 | 0 | | | | | | | |
| F.F | 7.2 | 12.7 | 0.8 | 0 | 0 | 0 | 0.8 | 12.7 | 7.2 | | 4.7 | 4.7 | 0 | | | | | | | |
| REW | 7.2 | 12.7 | 0.7 | 0 | 0 | 0 | 0.8 | 12.7 | 7.2 | | 4.7 | 4.7 | 0 | | | | | | | |

| REF. NO. | IC6005 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| STOP | | 0.5 | 0.2 | 4.8 | 4.8 | 0 | 4.8 | 0 | 9.2 | 0.1 | 0 | 9.2 | 0.1 | 4.8 | 0.1 | 0.1 | 0 | 0 | 0 | 0.5 |
| PLAY | | 1.1 | 0 | 4.8 | 4.8 | 0 | 0.1 | 0.1 | 9.2 | 0.1 | 0 | 9.2 | 0.1 | 0.1 | 4.7 | 4.7 | 0 | 0 | 0 | 1.1 |
| REC | | 0 | 0 | 0 | 0 | 0 | 4.8 | 0 | 0 | 4.5 | 0 | 0 | 4.5 | −0.3 | 0.2 | 0.2 | 4.7 | 0 | 0 | 4.7 |
| F.F | | 1.1 | 0.2 | 4.8 | 4.8 | 0.1 | 4.8 | 0 | 9.2 | 0.1 | 0 | 9.2 | 0.1 | 4.8 | 0.1 | 0.1 | 0 | 0 | 0 | 1.1 |
| REW | | 1.1 | 0.2 | 4.8 | 4.8 | 0.1 | 4.8 | 0.1 | 9.2 | 0.1 | 0 | 9.2 | 0.1 | 4.8 | 0.1 | 0.1 | 0 | 0 | 0 | 1.1 |

| REF. NO. | IC6005 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | 21 | 22 | | | | | | | | | | | | | | | | | | |
| STOP | 4.8 | 4.8 | | | | | | | | | | | | | | | | | | |
| PLAY | 4.8 | 0 | | | | | | | | | | | | | | | | | | |
| REC | 4.8 | 4.8 | | | | | | | | | | | | | | | | | | |
| F.F | 4.8 | 4.8 | | | | | | | | | | | | | | | | | | |
| REW | 4.8 | 4.8 | | | | | | | | | | | | | | | | | | |

# SYSTEM CONTROL Section TRs VOLTAGE CHART

| REF. NO. | Q6001 | | | Q6002 | | | Q6003 | | | Q6004 | | | Q6005 | | | Q6006 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B |
| STOP | 7.2 | 9.2 | 7.6 | 0 | 0 | 0.7 | 4.8 | 4.8 | 4.1 | 0 | 0 | 0.6 | 0.8 | 4.8 | 0.7 | −0.8 | 12.8 | −0.6 |
| PLAY | 7.2 | 9.3 | 7.6 | 0 | 0 | 0.6 | 4.8 | 4.8 | 4.1 | 0 | 0 | 0.6 | 0.8 | 4.8 | 1.1 | −0.5 | 12.9 | −0.7 |
| REC | 7.2 | 9.2 | 7.6 | 0 | 0 | 0.6 | 4.8 | 4.8 | 4.1 | 0 | 0 | 0.6 | 0.8 | 4.8 | 0.7 | −0.4 | 12.7 | −0.5 |
| F.F | 7.2 | 9.2 | 7.6 | 0 | 0 | 0.7 | 4.8 | 4.8 | 4.1 | 0 | 0 | 0.6 | 0.8 | 4.8 | 0.7 | 1.0 | 12.7 | 1.0 |
| REW | 7.2 | 9.2 | 7.6 | 0 | 0 | 0.7 | 4.8 | 4.8 | 4.1 | 0 | 0 | 0.6 | 0.8 | 4.8 | 0.7 | 1.0 | 12.7 | 1.0 |

| REF. NO. | Q6008 | | | Q6009 | | | Q6010 | | | Q6011 | | | Q6012 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B | | | |
| STOP | 0 | 3.2 | 0 | 0 | 0.5 | 0.4 | 3.9 | 0.1 | 0.1 | 9.5 | 5.3 | 8.9 | 0 | 0 | 0.6 | | | |
| PLAY | 0 | 3.2 | 0 | 0 | 0.1 | 0.4 | 3.9 | 0.1 | 0.1 | 9.5 | 5.4 | 8.9 | 0 | 0 | 0.6 | | | |
| REC | 0 | 3.2 | 0 | 0 | 0.1 | 0.4 | 3.9 | 0.1 | 0.1 | 9.5 | 5.0 | 8.9 | 0 | 0 | 0.6 | | | |
| F.F | 0 | 3.2 | 0 | 0 | 0.5 | 0.4 | 3.9 | 0.4 | 0.6 | 9.5 | 5.1 | 8.9 | 0 | 0 | 0.6 | | | |
| REW | 0 | 3.2 | 0 | 0 | 0.5 | 0.4 | 3.9 | 0.4 | 0.6 | 9.5 | 5.1 | 8.9 | 0 | 0 | 0.6 | | | |

| REF. NO. | QR6001 | | | QR6002 | | | QR6003 | | | QR6004 | | | Q6005 | | | QR6006 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B |
| STOP | 0 | 0 | 1.4 | 0 | 0 | 3.2 | 4.8 | 0.1 | 4.7 | 0 | 4.7 | 0.1 | 9.2 | −0.5 | 9.2 | 0 | 9.2 | 0 |
| PLAY | 0 | 0 | 1.4 | 0 | 0 | 3.2 | 4.8 | 0.1 | 4.7 | 0 | 4.7 | 0.1 | 9.3 | −0.4 | 9.2 | 0 | 9.2 | 0.1 |
| REC | 0 | 0 | 1.4 | 0 | 0 | 3.2 | 4.8 | 0.1 | 4.7 | 0 | 4.7 | 0.1 | 9.2 | −0.4 | 9.2 | 0 | 0 | 0.2 |
| F.F | 0 | 0 | 1.4 | 0 | 0 | 2.0 | 4.8 | 0.1 | 4.7 | 0 | 4.7 | 0.1 | 9.2 | 1.0 | 8.0 | 0 | 8.1 | 0.8 |
| REW | 0 | 0 | 1.4 | 0 | 0 | 3.0 | 4.8 | 0.1 | 4.7 | 0 | 4.7 | 0.1 | 9.3 | 1.0 | 8.0 | 0 | 8.1 | 0.9 |

| REF. NO. | QR6007 | | | QR6008 | | | QR6009 | | | QR6010 | | | Q6017 | | | QR6019 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B |
| STOP | 0 | 0 | 3.2 | 0 | 0 | 3.2 | 0.7 | −0.7 | 4.7 | 0 | 4.8 | 0 | 0 | 0.1 | 1.9 | 0 | 0 | 3.2 |
| PLAY | 0 | 0 | 3.2 | 0 | 0 | 3.2 | 0.7 | −0.7 | 4.7 | 0 | 4.8 | 0 | 0 | 4.5 | 0 | 0 | 0 | 3.2 |
| REC | 0 | 0 | 3.2 | 0 | 0 | 3.2 | 0.7 | 0 | 0 | 0 | 0 | 4.7 | 0 | 0 | 3.4 | 0 | 0 | 3.2 |
| F.F | 0 | 0 | 3.2 | 0 | 0 | 3.2 | 0.9 | −0.7 | 4.7 | 0 | 4.8 | 0 | 0 | 0.1 | 1.9 | 0 | 0 | 3.2 |
| REW | 0 | 0 | 3.2 | 0 | 0 | 3.2 | 0.7 | −0.7 | 4.7 | 0 | 4.8 | 0 | 0 | 0.1 | 1.9 | 0 | 0 | 3.2 |

# SERVO Section ICs VOLTAGE CHART

| REF. NO. | IC2001 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| PLAY | 0 | 2.4 | 2.5 | 2.4 | 0.1 | 0.3 | 2.4 | 0 | 2.5 | 1.6 | 4.8 | 2.5 | 2.5 | 1.6 | 4.7 | 4.7 | 0.2 | 0.2 | 0 | 0.1 |
| REC | 0 | 2.4 | 2.5 | 2.4 | 4.5 | 2.5 | 2.4 | 0 | 2.5 | 1.6 | 4.8 | 2.5 | 2.5 | 1.6 | 4.7 | 4.7 | 0.2 | 0.2 | 0 | 4.6 |

| REF. NO. | IC2001 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | 21 | 22 | | | | | | | | | | | | | | | | | | |
| PLAY | 0 | 2.4 | | | | | | | | | | | | | | | | | | |
| REC | 0 | 2.4 | | | | | | | | | | | | | | | | | | |

| REF. NO. | IC2002 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| PLAY | 1.0 | 0 | 0 | 0 | 0.3 | 1.1 | 2.9 | 0.6 | 2.9 | 2.6 | 0 | 2.5 | 1.6 | 4.8 | 2.6 | 2.6 | 2.6 | 2.6 | 2.4 | 2.5 |
| REC | 1.0 | 0 | 0 | 0 | 2.5 | 0.8 | 2.9 | 0.6 | 2.9 | 2.6 | 0 | 2.5 | 1.6 | 4.8 | 2.6 | 2.6 | 2.6 | 2.6 | 2.4 | 2.5 |

| REF. NO. | IC2002 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | | | | | | | | |
| PLAY | 2.6 | 2.5 | 0 | 0.9 | 0.1 | 0.6 | 0.5 | 0.1 | 0 | 2.5 | 2.4 | 2.4 | | | | | | | | |
| REC | 2.6 | 2.5 | 0 | 0.9 | 0.1 | 0.6 | 0.5 | 4.5 | 0 | 2.5 | 2.4 | 2.4 | | | | | | | | |

| REF. NO. | IC2003 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| PLAY | 4.8 | 1.9 | 2.6 | 2.5 | 2.5 | 2.6 | 2.6 | 2.6 | 2.3 | 0 | 2.0 | 1.6 | 1.6 | 1.6 | 1.6 | 2.0 | 1.4 | 1.9 | 0 | 2.5 |
| REC | 4.8 | 1.9 | 2.6 | 2.5 | 2.5 | 2.6 | 2.6 | 2.6 | 2.3 | 0 | 2.0 | 1.6 | 1.6 | 1.6 | 1.6 | 2.0 | 1.4 | 1.9 | 4.8 | 2.5 |

| REF. NO. | IC2004 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| PLAY | 2.0 | 0 | 2.3 | 1.8 | 0 | 2.4 | 2.6 | 2.6 | 4.8 | 3.0 | 2.5 | 0.1 | 1.5 | 1.5 | 0.5 | 0.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| REC | 2.0 | 0 | 2.3 | 1.8 | 0 | 2.4 | 2.6 | 2.6 | 4.8 | 3.0 | 2.5 | 0.1 | 1.5 | 1.5 | 0.5 | 0.5 | 3.5 | 3.5 | 3.5 | 3.5 |

| REF. NO. | IC2005 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| PLAY | 2.4 | 0.1 | 1.9 | 0 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 0.2 | 0 | 4.8 | 2.9 | 2.6 | 2.3 | 4.8 | 0.6 | 0.4 | 0.1 |
| REC | 2.4 | 0.1 | 1.9 | 0 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 0.2 | 0 | 4.8 | 2.9 | 2.6 | 2.3 | 4.8 | 0.6 | 0.4 | 0.1 |

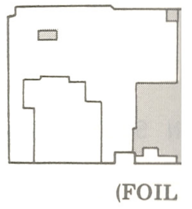
| REF. NO. | IC2005 | | | | | | | | | | IC2006 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | 21 | 22 | 23 | 24 | | | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | |
| PLAY | 0 | 0.6 | 1.8 | 5.5 | | | | | | | 2.5 | 2.5 | 2.5 | 0 | 2.5 | 2.5 | 2.5 | 4.8 | | |
| REC | 0 | 0.6 | 1.8 | 5.5 | | | | | | | 2.5 | 2.5 | 2.5 | 0 | 2.5 | 2.5 | 2.5 | 4.8 | | |

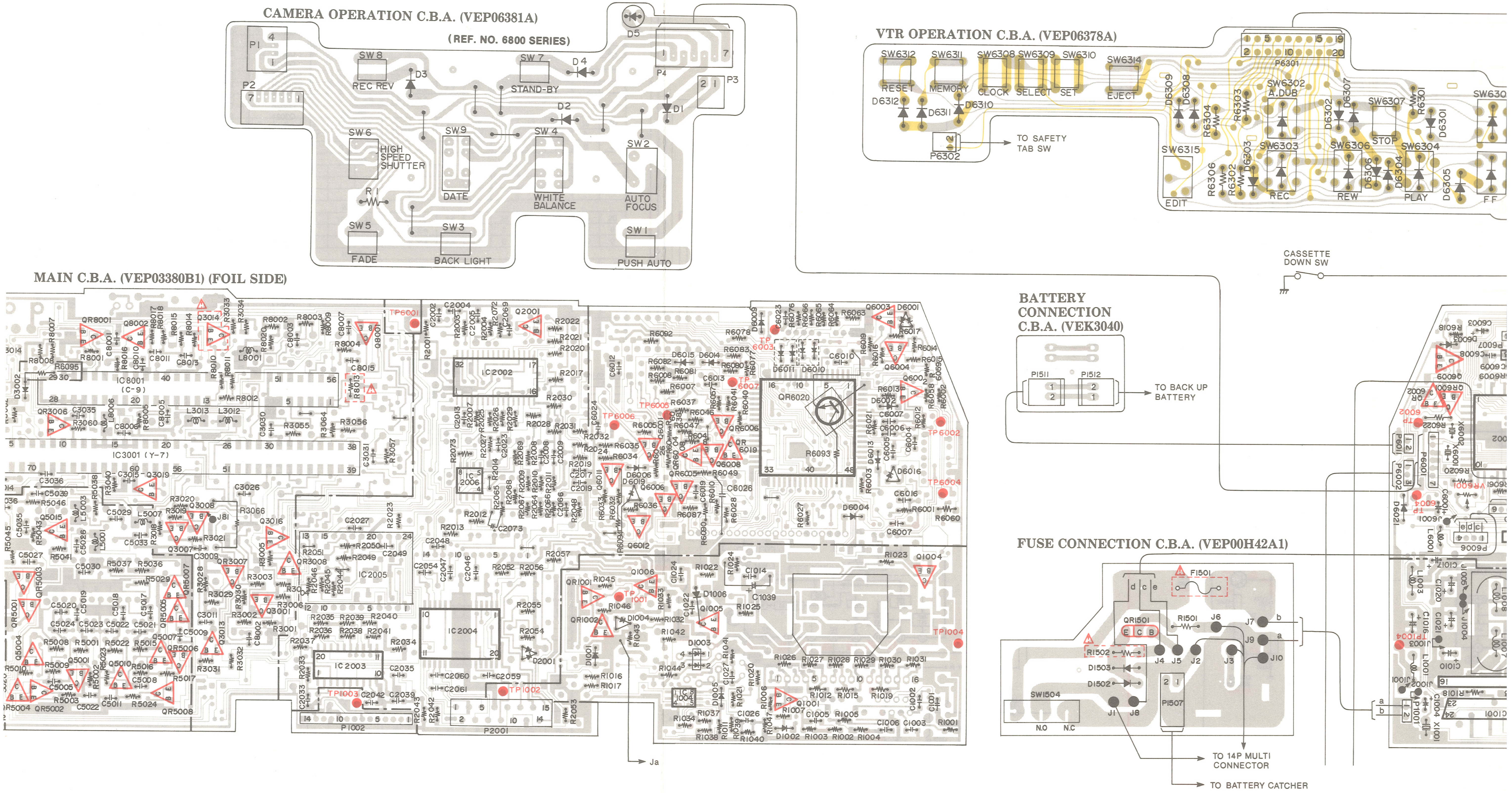
| REF. NO. | IC2007 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | | | | |
| PLAY | 0 | 0 | 2.6 | 0 | 4.8 | 1.1 | 0 | 4.8 | 4.8 | 0 | 0 | 0 | 4.8 | 4.8 | 0.1 | 1.6 | | | | |
| REC | 0 | 0 | 2.6 | 0 | 4.8 | 1.1 | 0 | 4.8 | 4.8 | 0 | 0 | 0 | 4.8 | 4.8 | 0.2 | 1.6 | | | | |

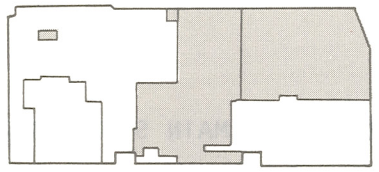
# SERVO Section TRs VOLTAGE CHART

| REF. NO. | Q2001 | | | Q2002 | | | Q2003 | | | Q2004 | | | Q2006 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B | | | |
| PLAY | 0 | 4.7 | 0.2 | 3.7 | 1.8 | 3.5 | 3.7 | 2.3 | 3.5 | 3.7 | 2.0 | 3.5 | 1.8 | 4.8 | 2.4 | | | |
| REC | 0 | 4.7 | 0.2 | 3.7 | 1.8 | 3.5 | 3.7 | 2.3 | 3.5 | 3.7 | 2.0 | 3.5 | 1.8 | 4.8 | 2.4 | | | |

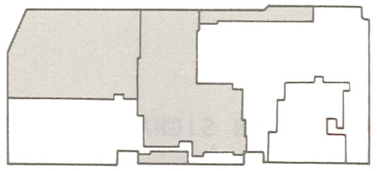
# 3-20. SERVO & SYSTEM CONTROL Section In Main Circuit Board (VEP03380B1), CAMERA OPERATION (VEP06381A) & VTR OPERATION (VEP06378A) CIRCUIT BOARDS



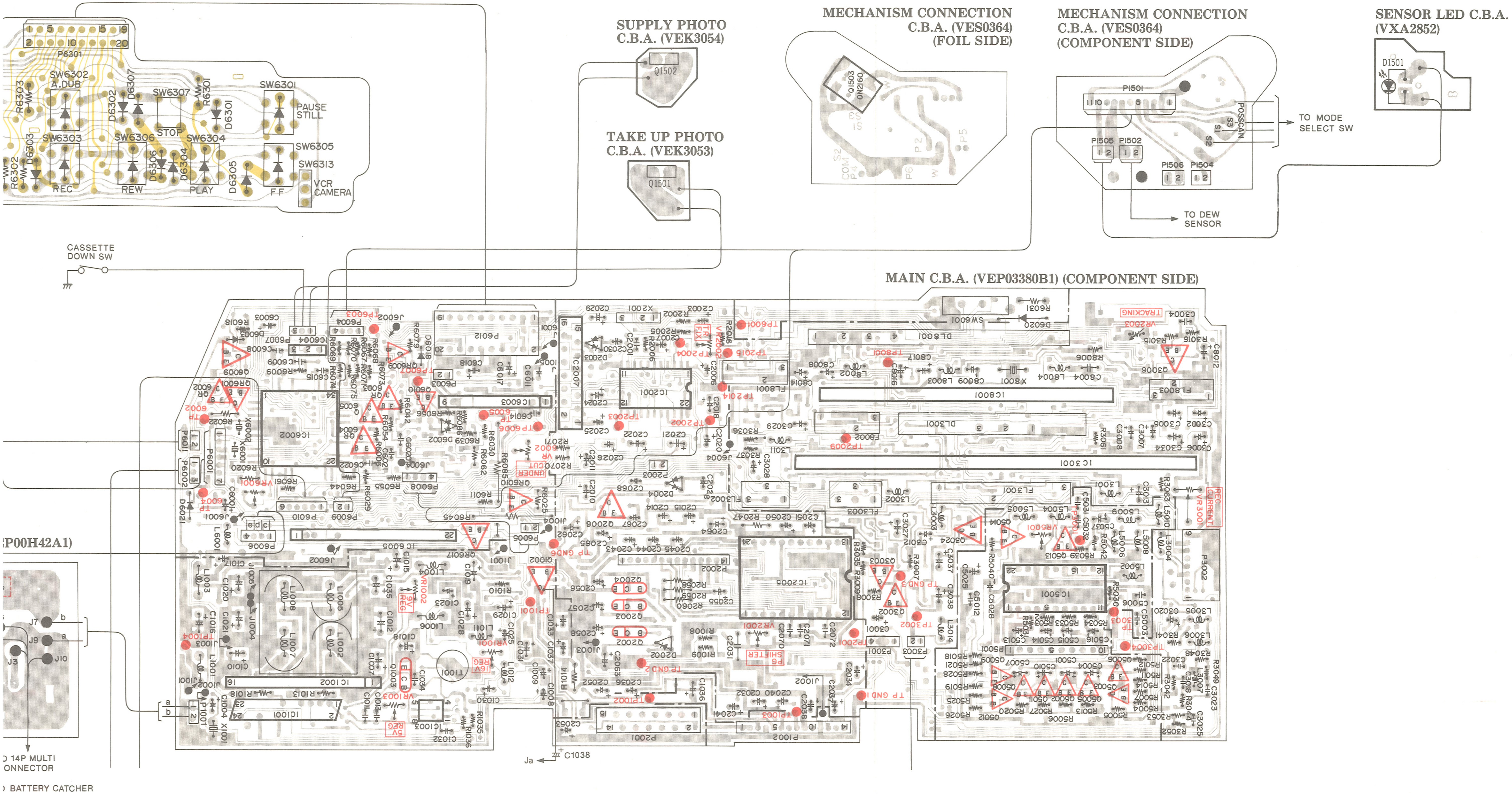

CAMERA OPERATION C.B.A. (VEP06381A)
(REF. NO. 6800 SERIES)
P1
P2
P3
P4
D1
D2
D3
D4
D5
SW8
REC REV
SW7
STAND-BY
SW6
HIGH SPEED SHUTTER
SW9
DATE
SW4
WHITE BALANCE
SW2
AUTO FOCUS
R1
SW5
FADE
SW3
BACK LIGHT
SW1
PUSH AUTO
VTR OPERATION C.B.A. (VEP06378A)
SW6312
RESET
SW6311
MEMORY
SW6308
CLOCK
SW6309
SELECT
SW6310
SET
SW6314
EJECT
D6312
D6311
D6310
P6302
TO SAFETY TAB SW
P6301
SW6302
A.DUB
SW6307
STOP
SW6315
EDIT
SW6303
REC
SW6306
REW
SW6304
PLAY
FF
D6309
D6308
D6307
D6306
D6305
D6304
D6303
D6302
D6301
R6301
R6302
R6303
R6304
R6306
CASSETTE DOWN SW
MAIN C.B.A. (VEP03380B1) (FOIL SIDE)
IC8001 (C-9)
IC3001 (Y-7)
IC2002
IC2004
IC2005
IC2003
IC2006
IC6001
QR6020
IC1004
P1002
P2001
TP6001
TP6002
TP6003
TP6004
TP6005
TP6006
TP6007
TP1001
TP1002
TP1003
TP1004
Ja
BATTERY CONNECTION C.B.A. (VEK3040)
P1511
P1512
TO BACK UP BATTERY
FUSE CONNECTION C.B.A. (VEP00H42A1)
F1501
QR1501
R1501
R1502
D1502
D1503
SW1504
J1
J2
J3
J4
J5
J6
J7
J8
J9
J10
P1507
N.O
N.C
TO 14P MULTI CONNECTOR
TO BATTERY CATCHER



(FOIL SIDE)



(COMPONENT SIDE)

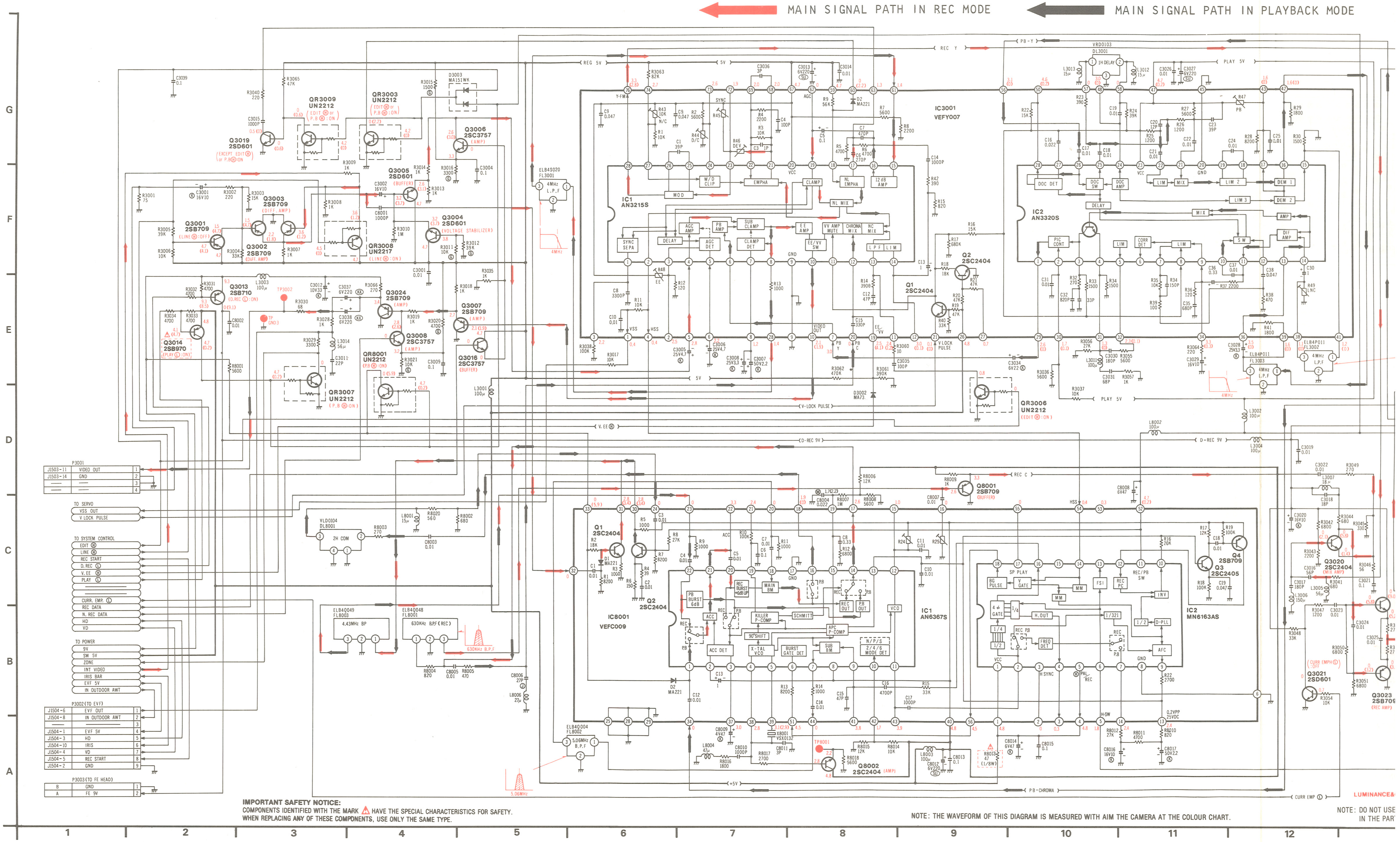

SUPPLY PHOTO C.B.A. (VEK3054)
Q1502
TAKE UP PHOTO C.B.A. (VEK3053)
Q1501
MECHANISM CONNECTION C.B.A. (VES0364) (FOIL SIDE)
MECHANISM CONNECTION C.B.A. (VES0364) (COMPONENT SIDE)
P1501
P1505
P1502
P1506
P1504
POSSCAN
S3
S1
S2
TO MODE SELECT SW
TO DEW SENSOR
SENSOR LED C.B.A. (VXA2852)
D1501
P6301
SW6302
A.DUB
SW6307
SW6301
PAUSE
STILL
SW6303
SW6306
STOP
SW6304
SW6305
SW6313
REC
REW
PLAY
F F
VCR
CAMERA
CASSETTE DOWN SW
MAIN C.B.A. (VEP03380B1) (COMPONENT SIDE)
P00H42A1)
14P MULTI CONNECTOR
BATTERY CATCHER
Ja
C1038
TRACKING
VR2003
REC CURRENT
VR3001
UNDER CUT
VR 6002
P6 SHIFTER
IC6002
IC2001
IC8001
DL3001
IC3001
IC2005
IC5001
IC1001
IC6005
DL8001
P2001
P2002
P6002
P3002

Next Page:
LUMINANCE, CHROMINANCE &
HEAD AMP Section

# 3-21. LUMINANCE, CHROMINANCE & HEAD AMP SCHEMATIC DIAGRAM

MAIN SIGNAL PATH IN REC MODE

MAIN SIGNAL PATH IN PLAYBACK MODE

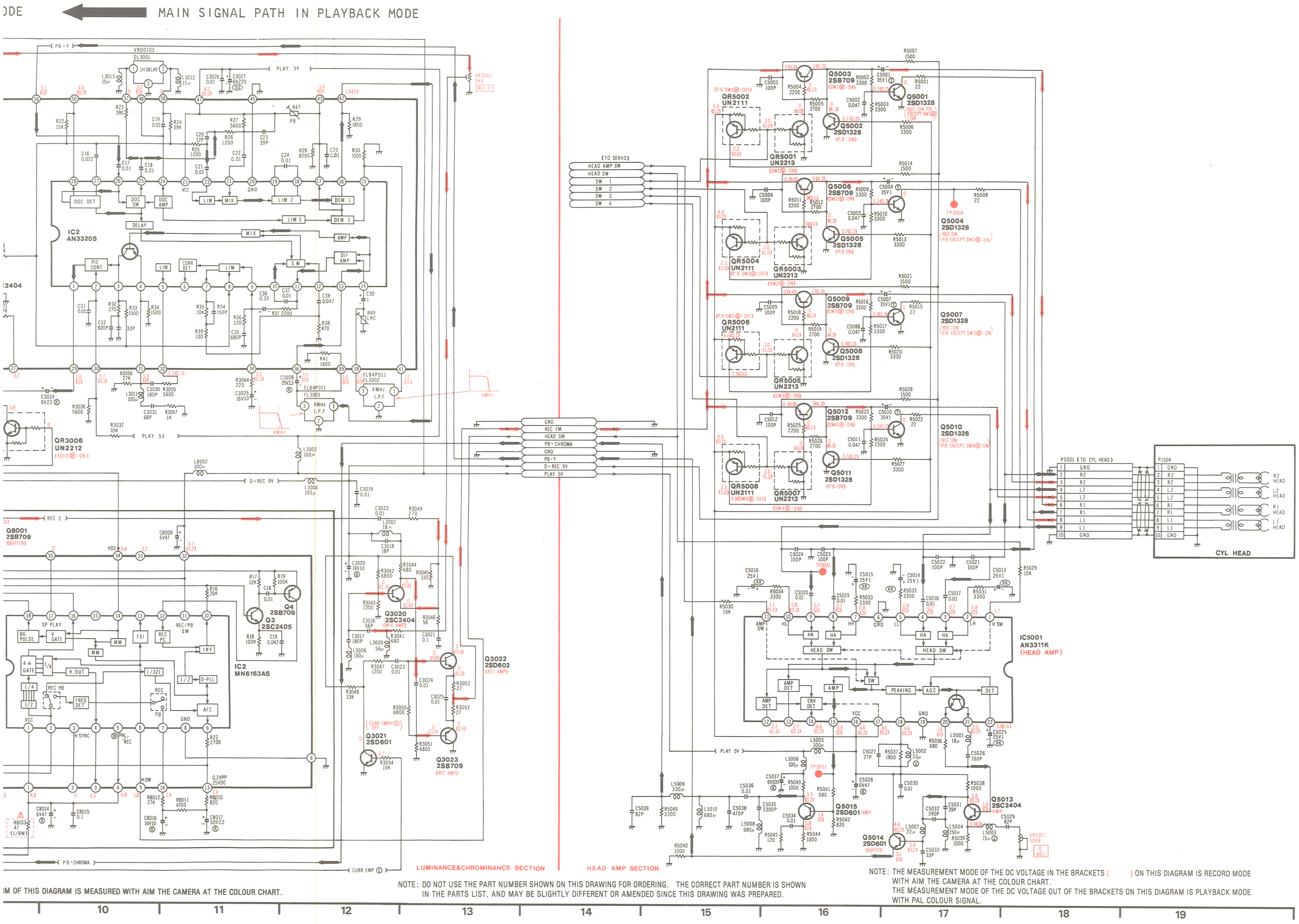

IC1 AN3215S
IC3001 VEFY007
IC2 AN3320S
IC8001 VEFC009
IC1 AN6367S
IC2 MN6163AS
Q3019 2SD601
QR3009 UN2212
QR3003 UN2212
Q3006 2SC3757
Q3005 2SD601
Q3003 2SB709
Q3001 2SB709
Q3002 2SB709
Q3004 2SD601
QR3008 UN2217
Q3013 2SB710
Q3024 2SB709
Q3007 2SB709
Q3014 2SB970
Q3008 2SC3757
Q3016 2SC3757
QR8001 UN2212
QR3007 UN2212
QR3006 UN2212
Q1 2SC2404
Q2 2SC2404
Q8001 2SB709
Q8002 2SC2404
Q3 2SC2405
Q4 2SB709
Q3020 2SC2404
Q3021 2SD601
Q3023 2SB709
P3001
J1503-11 VIDEO OUT
J1503-14 GND
TO SERVO
VSS OUT
V LOCK PULSE
TO SYSTEM CONTROL
EDIT
LINE
REC START
D.REC
V.EE
PLAY
CURR. EMP.
REC DATA
N. REC DATA
HD
VD
TO POWER
9V
SW 5V
ZONE
INT VIDEO
IRIS BAR
EVF 5V
IN OUTDOOR AWT
P3002 (TO EVF)
J1504-6 EVF OUT
J1504-8 IN OUTDOOR AWT
J1504-1 EVF 5V
J1504-3 HD
J1504-10 IRIS
J1504-4 VD
J1504-5 REC START
J1504-2 GND
P3003 (TO FE HEAD)
B GND
A FE 9V
REG 5V
5V
REC Y
PB-Y
PLAY 5V
V.EE
D-REC 9V
REC C
V-LOCK PULSE
PB-CHROMA
CURR EMP
+5V
4MHz
5.06MHz
630KHz B.P.F
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12

**IMPORTANT SAFETY NOTICE:**
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

NOTE: THE WAVEFORM OF THIS DIAGRAM IS MEASURED WITH AIM THE CAMERA AT THE COLOUR CHART.

LUMINANCE&

NOTE: DO NOT USE
IN THE PAR


MAIN SIGNAL PATH IN PLAYBACK MODE
IC2
AN3320S
IC2
MN6163AS
Q4
2SB709
Q3
2SC2405
Q8001
2SB709
(BUFFER)
QR3006
UN2212
Q3020
2SC2404
(MIX AMP)
Q3021
2SD601
Q3022
2SD602
(REC AMP)
Q3023
2SB709
(REC AMP)
(TO SERVO)
HEAD AMP SW
HEAD SW
SW 1
SW 2
SW 3
SW 4
GND
REC FM
HEAD SW
PB-CHROMA
GND
PB-Y
D-REC 9V
PLAY 5V
Q5001
2SD1328
Q5002
2SD1328
Q5003
2SB709
QR5001
UN2213
QR5002
UN2111
Q5004
2SD1328
Q5005
2SD1328
Q5006
2SB709
QR5003
UN2213
QR5004
UN2111
Q5007
2SD1328
Q5008
2SD1328
Q5009
2SB709
QR5005
UN2213
QR5006
UN2111
Q5010
2SD1328
Q5011
2SD1328
Q5012
2SB709
QR5007
UN2213
QR5008
UN2111
TP3004
P5001 (TO CYL HEAD)
P1504
R2 HEAD
L2 HEAD
R1 HEAD
L1 HEAD
CYL HEAD
IC5001
AN3311K
(HEAD AMP)
TP3003
TP3001
Q5013
2SC2404
Q5014
2SD601
(BUFFER)
Q5015
2SD601 (AMP)
VR5001
500B
Q ADJ.
VR3001
PLAY 5V
D-REC 9V
REC C
PB-CHROMA
CURR EMP
LUMINANCE&CHROMINANCE SECTION
HEAD AMP SECTION
10
11
12
13
14
15
16
17
18
19

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

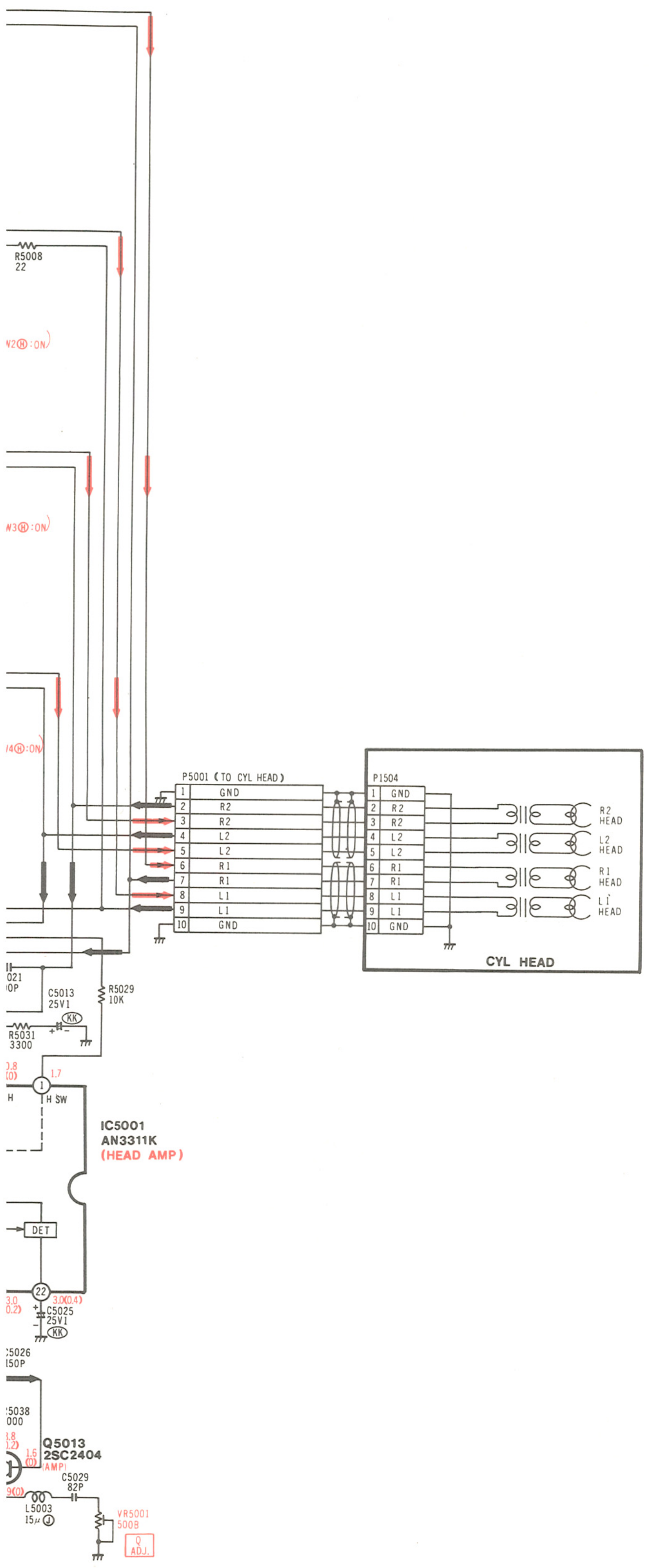
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS (   ) ON THIS DIAGRAM IS RECORD MODE WITH AIM THE CAMERA AT THE COLOUR CHART.
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL.

M OF THIS DIAGRAM IS MEASURED WITH AIM THE CAMERA AT THE COLOUR CHART.

**LUMINANCE, CHROMINANCE & HEAD AMP SCHEMATIC**

| Transistor | |
|---|---|
| Q3001 | F-2 |
| Q3002 | F-3 |
| Q3003 | F-3 |
| Q3004 | F-4 |
| Q3005 | F-4 |
| Q3006 | G-5 |
| Q3007 | E-5 |
| Q3008 | E-4 |
| Q3013 | E-2 |
| Q3014 | E-2 |
| Q3016 | E-5 |
| Q3019 | G-3 |
| Q3020 | C-12 |
| Q3021 | B-12 |
| Q3022 | C-13 |
| Q3023 | B-13 |
| Q3024 | E-4 |
| Q5001 | G-7 |
| Q5002 | G-16 |
| Q5003 | G-16 |
| Q5004 | F-17 |
| Q5005 | F-16 |
| Q5006 | F-16 |
| Q5007 | E-17 |
| Q5008 | E-16 |
| Q5009 | E-16 |
| Q5010 | D-17 |
| Q5011 | D-16 |
| Q5012 | E-16 |
| Q5013 | A-17 |
| Q5014 | A-17 |
| Q5015 | A-16 |
| Q8001 | D-9 |
| Q8002 | A-8 |
| **Transistor & Resistor** | |
| QR3003 | G-4 |
| QR3006 | D-10 |
| QR3007 | D-3 |
| QR3008 | F-4 |
| QR3009 | G-3 |
| QR5001 | G-16 |
| QR5002 | G-15 |
| QR5003 | F-16 |
| QR5004 | F-15 |
| QR5005 | E-16 |
| QR5006 | E-15 |
| QR5007 | D-16 |
| QR5008 | D-15 |
| QR8001 | E-4 |
| **Integrated Circuit** | |
| IC3001 | G-8 |
| IC5001 | C-18 |
| IC8001 | B-6 |
| **Test Point** | |
| TP3001 | B-16 |
| TP3002 | E-3 |
| TP3003 | C-16 |
| TP3004 | F-17 |
| TP8001 | A-8 |
| TP GND 3 | E-3 |
| **Adjustment** | |
| VR3001 | G-13 |
| VR5001 | A-18 |
| **Connector** | |
| P1504 | D-19 |
| P3001 | D-1 |
| P3002 | B-1 |
| P3003 | A-1 |
| P5001 | D-18 |

ADDRESS INFORMATION



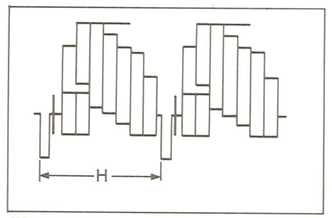
)E OF THE DC VOLTAGE IN THE BRACKETS (    ) ON THIS DIAGRAM IS RECORD MODE
AT THE COLOUR CHART.
)E OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE
AL.

18 19

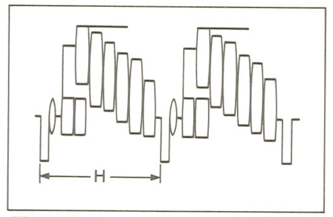
| LUMINANCE, CHROMINANCE & HEAD AMP SCHEMATIC | |
|---|---|
| **Transistor** | |
| Q3001 | F-2 |
| Q3002 | F-3 |
| Q3003 | F-3 |
| Q3004 | F-4 |
| Q3005 | F-4 |
| Q3006 | G-5 |
| Q3007 | E-5 |
| Q3008 | E-4 |
| Q3013 | E-2 |
| Q3014 | E-2 |
| Q3016 | E-5 |
| Q3019 | G-3 |
| Q3020 | C-12 |
| Q3021 | B-12 |
| Q3022 | C-13 |
| Q3023 | B-13 |
| Q3024 | E-4 |
| Q5001 | G-7 |
| Q5002 | G-16 |
| Q5003 | G-16 |
| Q5004 | F-17 |
| Q5005 | F-16 |
| Q5006 | F-16 |
| Q5007 | E-17 |
| Q5008 | E-16 |
| Q5009 | E-16 |
| Q5010 | D-17 |
| Q5011 | D-16 |
| Q5012 | E-16 |
| Q5013 | A-17 |
| Q5014 | A-17 |
| Q5015 | A-16 |
| Q8001 | D-9 |
| Q8002 | A-8 |
| **Transistor & Resistor** | |
| QR3003 | G-4 |
| QR3006 | D-10 |
| QR3007 | D-3 |
| QR3008 | F-4 |
| QR3009 | G-3 |
| QR5001 | G-16 |
| QR5002 | G-15 |
| QR5003 | F-16 |
| QR5004 | F-15 |
| QR5005 | E-16 |
| QR5006 | E-15 |
| QR5007 | D-16 |
| QR5008 | D-15 |
| QR8001 | E-4 |
| **Integrated Circuit** | |
| IC3001 | G-8 |
| IC5001 | C-18 |
| IC8001 | B-6 |
| **Test Point** | |
| TP3001 | B-16 |
| TP3002 | E-3 |
| TP3003 | C-16 |
| TP3004 | F-17 |
| TP8001 | A-8 |
| TP GND 3 | E-3 |
| **Adjustment** | |
| VR3001 | G-13 |
| VR5001 | A-18 |
| **Connector** | |
| P1504 | D-19 |
| P3001 | D-1 |
| P3002 | B-1 |
| P3003 | A-1 |
| P5001 | D-18 |

ADDRESS INFORMATION

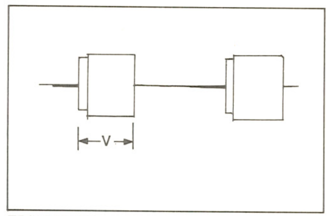
## LUMINANCE & CHROMINANCE CIRCUIT TP (Test Point) WAVE FORM (REF No. 3000 Series)



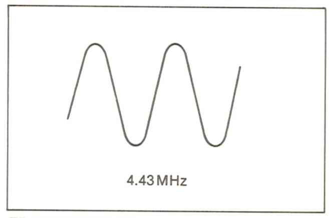
TP3002 REC
0.5V/20μsec. div. 2Vp-p



TP3002 PLAY
0.5V/20μsec. div. 2Vp-p



TP3003 REC
0.2V/20msec. div. 0.4Vp-p



TP8001 REC/PLAY
0.2V/0.1μsec. div. 0.6Vp-p

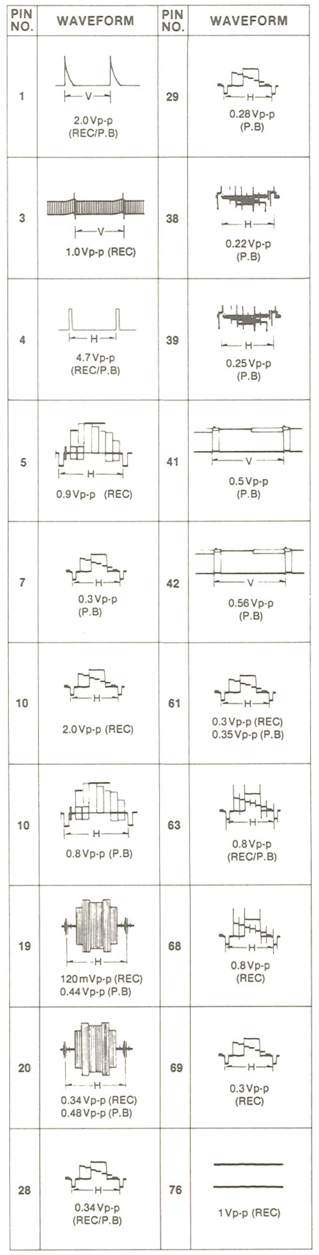
## LUMINANCE & CHROMINANCE Section ICs VOLTAGE CHART

| REF. NO. | IC3001 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| PLAY | 0.4 | 2.5 | 2.2 | 0.4 | 2.8 | 2.2 | 3.0 | 1.2 | 0 | 2.1 | 2.4 | 3.0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.5 | 0 |
| REC | 0.4 | 2.5 | 2.2 | 0.4 | 2.8 | 2.2 | 3.0 | 1.2 | 0 | 1.9 | 1.2 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 4.1 | 0 |
| REF. NO. | IC3001 | | | | | | | | | | | | | | | | | | | |
| MODE | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| PLAY | 0.1 | | | | | 4.8 | 0.7 | 1.4 | 2.6 | 1.7 | 1.3 | 2.3 | 0 | 3.3 | 0 | 3.5 | 0 | 1.1 | 1.6 | 0 |
| REC | 0 | | | | | 4.8 | 0.7 | 1.4 | 0 | 0.1 | 0 | 0.1 | 0 | 0.3 | 0 | 0 | 0 | 0 | 0 | 0 |
| REF. NO. | IC3001 | | | | | | | | | | | | | | | | | | | |
| MODE | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| PLAY | 1.2 | 1.6 | 1.6 | 0 | 0 | 0 | 4.7 | 3.0 | 3.5 | 4.6 | 0 | | | | | 3.1 | 0 | 0 | 4.7 | 0 |
| REC | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0 | 0.2 | 0 | | | | | 0 | 0 | 0 | 4.7 | 2.2 |
| REF. NO. | IC3001 | | | | | | | | | | | | | | | | | | | |
| MODE | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | | | | |
| PLAY | 1.4 | 0 | 1.3 | 0 | 0 | 0 | 4.7 | 2.0 | 2.0 | 0 | 1.9 | 1.9 | 2.6 | 2.7 | 0 | 3.3 | | | | |
| REC | 1.4 | 0 | 1.3 | 0 | 0 | 0 | 4.7 | 2.0 | 2.0 | 0 | 1.9 | 1.9 | 2.6 | 2.7 | 0 | 2.8 | | | | |
| REF. NO. | IC5001 | | | | | | | | | | | | | | | | | | | |
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| PLAY | 1.7 | 0.8 | 0.7 | 0.7 | 0.8 | 0 | 0.8 | 0.7 | 0.7 | 0.8 | 1.7 | 2.7 | 2.7 | 4.6 | 2.6 | 4.6 | 4.6 | 4.6 | 0 | 1.6 |
| REC | 1.7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.5 | 0.1 | 0.1 | 0.2 | 0 | 0.2 | 0.2 | 0.2 | 0 | 0 |
| REF. NO. | IC5001 | | | | | | | | | | | | | | | | | | | |
| MODE | 21 | 22 | | | | | | | | | | | | | | | | | | |
| PLAY | 3.0 | 3.0 | | | | | | | | | | | | | | | | | | |
| REC | 0.2 | 0.4 | | | | | | | | | | | | | | | | | | |
| REF. NO. | IC8001 | | | | | | | | | | | | | | | | | | | |
| MODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| PLAY | 4.8 | 0 | 0.3 | 4.8 | 1.8 | 0 | 0 | | | | | | 2.4 | 2.4 | 1.0 | 0 | 2.6 | 1.9 | 1.7 | 0 |
| REC | 4.8 | 0 | 0.3 | 4.8 | 1.8 | 0 | 0 | | | | | | 2.4 | 2.4 | 1.0 | 0 | 2.6 | 0 | 2.2 | 0 |
| REF. NO. | IC8001 | | | | | | | | | | | | | | | | | | | |
| MODE | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| PLAY | 2.4 | 3.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.8 | 2.8 | 0 | 0 | 0 | 0 | 0 | 3.0 | 2.8 | 3.1 | 4.8 |
| REC | 2.4 | 3.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3.4 | 3.4 | 0 | 5.9 | 0 | 0 | 0 | 3.0 | 2.8 | 2.9 | 4.8 |
| REF. NO. | IC8001 | | | | | | | | | | | | | | | | | | | |
| MODE | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | | | | |
| PLAY | 3.8 | 1.7 | 3.9 | 0 | | | | | | 0 | 4.5 | 4.7 | 0.3 | 0.4 | 0 | 4.5 | | | | |
| REC | 3.8 | 1.7 | 3.9 | 0 | | | | | | 0 | 4.5 | 0.2 | 0.3 | 0.4 | 0 | 4.5 | | | | |

## LUMINANCE & CHROMINANCE Section TRs VOLTAGE CHART

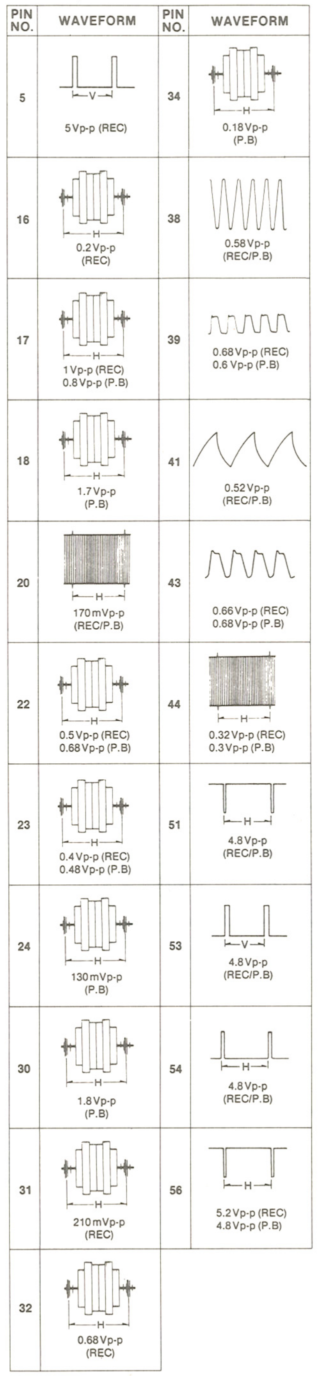
| REF. NO. | Q3001 | | | Q3002 | | | Q3003 | | | Q3004 | | | Q3005 | | | Q3006 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MODE | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B |
| PLAY | 4.7 | 1.5 | 4.7 | 2.2 | 0 | 1.5 | 2.2 | 0 | 3.6 | 3.2 | 4.7 | 3.8 | 2.6 | 4.7 | 3.2 | 3.3 | 2.6 | 0 |
| REC | 4.7 | 4.7 | 4.1 | 1.8 | 0 | 4.7 | 1.8 | 0 | 1.2 | 3.7 | 4.7 | 3.8 | 3.1 | 4.7 | 3.7 | 3.3 | 3.0 | 0 |
| REF. NO. | Q3007 | | | Q3008 | | | Q3013 | | | Q3014 | | | Q3016 | | | Q3019 | | |
| MODE | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B |
| PLAY | 2.7 | 0 | 2.1 | 3.2 | 2.8 | 0 | 9.3 | 0 | 9.3 | 4.8 | 4.7 | 4.1 | 0 | 4.7 | 0 | 0 | 5.0 | 0 |
| REC | 2.7 | 0 | 1.9 | 3.2 | 2.6 | 0 | 9.3 | 9.1 | 8.5 | 4.8 | 0.2 | 4.7 | 0 | 4.7 | 0 | 0 | 0 | 0.6 |
| REF. NO. | Q3020 | | | Q3021 | | | Q3022 | | | Q3023 | | | Q3024 | | | Q5001 | | |
| MODE | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B |
| PLAY | 0 | 0 | 0 | 0 | 0 | 0.7 | 0 | 0 | 0 | 0 | 0 | 0 | 3.4 | 0 | 2.8 | 0 | 0 | 0.3 |
| REC | 1.4 | 5.8 | 2.1 | 0 | 0 | 0.7 | 5.2 | 9.0 | 5.8 | 3.9 | 0 | 3.2 | 3.4 | 0 | 2.6 | 0 | 0 | 0.7 |
| REF. NO. | Q5002 | | | Q5003 | | | Q5004 | | | Q5005 | | | Q5006 | | | Q5007 | | |
| MODE | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B |
| PLAY | 0 | 0 | 0.7 | 0 | 0 | 0 | 0 | 0 | 0.3 | 0 | 0 | 0.7 | 0 | 0 | 0 | 0 | 0 | 0.3 |
| REC | 0 | 4.3 | 0.2 | 4.4 | 4.3 | 6.1 | 0 | 0 | 0.7 | 0 | 4.3 | 0.2 | 4.4 | 4.3 | 6.1 | 0 | 0 | 0.7 |
| REF. NO. | Q5008 | | | Q5009 | | | Q5010 | | | Q5011 | | | Q5012 | | | Q5013 | | |
| MODE | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B |
| PLAY | 0 | 0 | 0.7 | 0 | 0 | 0 | 0 | 0 | 0.3 | 0 | 0 | 0.7 | 0 | 0 | 0 | 0.9 | 3.8 | 1.6 |
| REC | 0 | 4.3 | 0.2 | 4.4 | 4.3 | 6.1 | 0 | 0 | 0.7 | 0 | 4.3 | 0.2 | 4.4 | 4.3 | 6.1 | 0 | 0.2 | 0 |
| REF. NO. | Q5014 | | | Q5015 | | | Q8001 | | | Q8002 | | | | | | | | |
| MODE | E | C | B | E | C | B | E | C | B | E | C | B | | | | | | |
| PLAY | 3.1 | 4.6 | 3.8 | 0.8 | 3.9 | 1.4 | 3.3 | 0 | 2.6 | 2.2 | 4.8 | 2.8 | | | | | | |
| REC | 0 | 0.2 | 0.2 | 0 | 0.2 | 0 | 3.3 | 0 | 2.6 | 2.2 | 4.8 | 2.8 | | | | | | |
| REF. NO. | QR3003 | | | QR3006 | | | QR3007 | | | QR3008 | | | QR3009 | | | QR5001 | | |
| MODE | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B |
| PLAY | 0 | 0 | 4.2 | 0 | 0.8 | 0 | 0 | 0 | 4.7 | 3.6 | 4.7 | 4.5 | 0 | 0 | 4.2 | 0 | 0 | 2.0 |
| REC | 0 | 2.2 | 0 | 0 | 0.8 | 0 | 0 | 0 | 0.2 | 1.2 | 4.7 | 0 | 0 | 0.6 | 0 | 0 | 4.0 | 1.0 |
| REF. NO. | QR5002 | | | QR5003 | | | QR5004 | | | QR5005 | | | QR5006 | | | QR5007 | | |
| MODE | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B | E | C | B |
| PLAY | 4.6 | 2.3 | 2.0 | 0 | 0 | 2.0 | 4.6 | 2.3 | 2.0 | 0 | 0 | 2.0 | 4.6 | 2.3 | 2.0 | 0 | 0 | 2.0 |
| REC | 0.2 | 0.6 | 1.0 | 0 | 4.0 | 1.0 | 0.2 | 0.6 | 1.0 | 0 | 4.0 | 1.0 | 0.2 | 0.6 | 1.0 | 0 | 4.0 | 1.0 |
| REF. NO. | QR5008 | | | QR8001 | | | | | | | | | | | | | | |
| MODE | E | C | B | E | C | B | | | | | | | | | | | | |
| PLAY | 4.6 | 2.3 | 2.0 | 0 | 0 | 4.7 | | | | | | | | | | | | |
| REC | 0.2 | 0.6 | 1.0 | 0 | 5.9 | 0.2 | | | | | | | | | | | | |

## IC3001 (VEFY007)



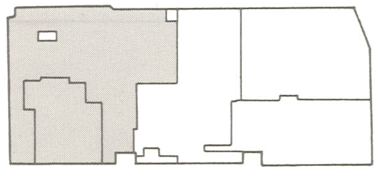
| PIN NO. | WAVEFORM | PIN NO. | WAVEFORM |
|---|---|---|---|
| 1 | 2.0Vp-p<br>(REC/P.B) | 29 | 0.28Vp-p<br>(P.B) |
| 3 | 1.0Vp-p (REC) | 38 | 0.22Vp-p<br>(P.B) |
| 4 | 4.7Vp-p<br>(REC/P.B) | 39 | 0.25Vp-p<br>(P.B) |
| 5 | 0.9Vp-p (REC) | 41 | 0.5Vp-p<br>(P.B) |
| 7 | 0.3Vp-p<br>(P.B) | 42 | 0.56Vp-p<br>(P.B) |
| 10 | 2.0Vp-p (REC) | 61 | 0.3Vp-p (REC)<br>0.35Vp-p (P.B) |
| 10 | 0.8Vp-p (P.B) | 63 | 0.8Vp-p<br>(REC/P.B) |
| 19 | 120mVp-p (REC)<br>0.44Vp-p (P.B) | 68 | 0.8Vp-p<br>(REC) |
| 20 | 0.34Vp-p (REC)<br>0.48Vp-p (P.B) | 69 | 0.3Vp-p<br>(REC) |
| 28 | 0.34Vp-p<br>(REC/P.B) | 76 | 1Vp-p (REC) |

## IC8001 (VEFC009)

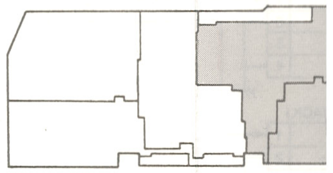


| PIN NO. | WAVEFORM | PIN NO. | WAVEFORM |
|---|---|---|---|
| 5 | 5Vp-p (REC) | 34 | 0.18Vp-p<br>(P.B) |
| 16 | 0.2Vp-p<br>(REC) | 38 | 0.58Vp-p<br>(REC/P.B) |
| 17 | 1Vp-p (REC)<br>0.8Vp-p (P.B) | 39 | 0.68Vp-p (REC)<br>0.6 Vp-p (P.B) |
| 18 | 1.7Vp-p<br>(P.B) | 41 | 0.52Vp-p<br>(REC/P.B) |
| 20 | 170mVp-p<br>(REC/P.B) | 43 | 0.66Vp-p (REC)<br>0.68Vp-p (P.B) |
| 22 | 0.5Vp-p (REC)<br>0.68Vp-p (P.B) | 44 | 0.32Vp-p (REC)<br>0.3Vp-p (P.B) |
| 23 | 0.4Vp-p (REC)<br>0.48Vp-p (P.B) | 51 | 4.8Vp-p<br>(REC/P.B) |
| 24 | 130mVp-p<br>(P.B) | 53 | 4.8Vp-p<br>(REC/P.B) |
| 30 | 1.8Vp-p<br>(P.B) | 54 | 4.8Vp-p<br>(REC/P.B) |
| 31 | 210mVp-p<br>(REC) | 56 | 5.2Vp-p (REC)<br>4.8Vp-p (P.B) |
| 32 | 0.68Vp-p<br>(REC) | | |

# 3-22. LUMINANCE, CHROMINANCE & HEAD AMP Section In Main Circuit Board (VEP03380B1)

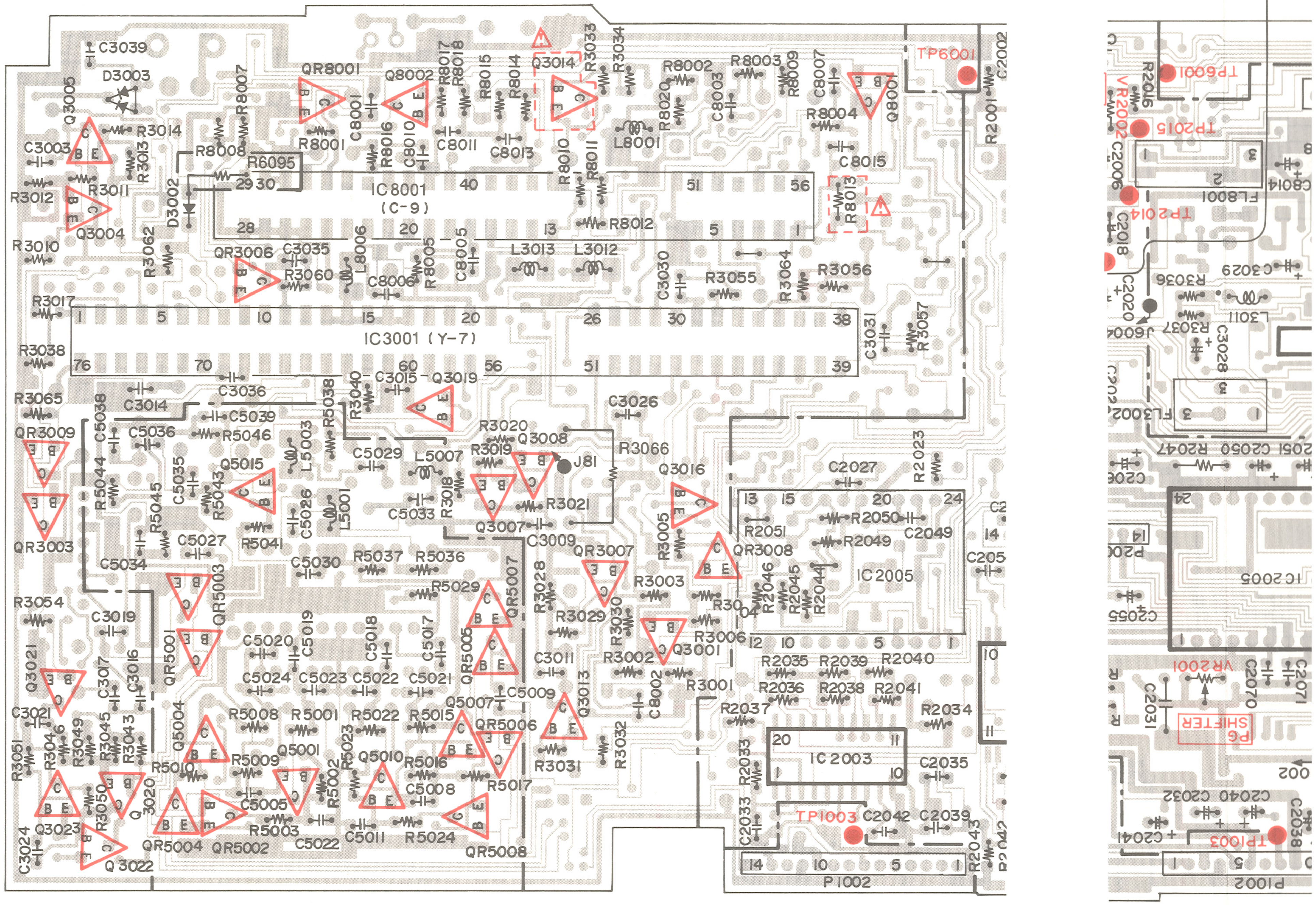


(FOIL SIDE)



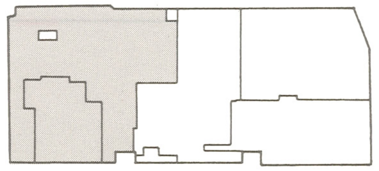
(COMPONENT SIDE)

## MAIN C.B.A. (VEP03380B1) (FOIL SIDE)

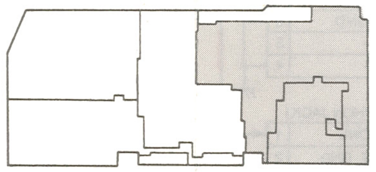


IC8001 (C-9)
IC3001 (Y-7)
IC2005
IC2003
TP6001
TP1003
TP2015
TP2014
P1002
J81
L8001
L3013
L3012
L5007
Q3014
Q8001
Q8002
QR8001
Q3004
Q3005
Q3008
Q3016
Q3019
Q3021
Q3022
Q3023
QR3003
QR3006
QR3007
QR3008
QR3009
QR5001
QR5002
QR5003
QR5004
QR5005
QR5006
QR5007
QR5008
D3003
D3002
C3039
C3003
R3012
R3010
R3017
R3038
R3065
R3054
R3051
C3024
C3021
R8007
R8001
R8008
R6095
C8001
C8011
C8013
R8012
R8013
C8015
R8004
R8002
R8003
R8009
C8007
C8003
C3035
R3060
C8006
R3055
R3056
R3064
C3030
C3031
R3057
C3026
R3020
R3066
C2027
R2023
R2050
R2049
C2049
R2051
R3003
R3029
R3002
R3001
R3006
R3031
R3032
C3011
C3009
C3008
R3021
C5033
R3019
R3018
C5029
C5030
R5037
R5036
R5029
R5041
C5027
C5034
R5046
C5039
C3036
C3014
C5036
R5044
R5045
C5035
R5043
Q5015
C5026
L5001
L5003
R5038
R3040
C3015
C5020
C5019
C5018
C5017
C5024
C5023
C5022
C5021
Q5007
C5009
R5008
R5001
R5022
R5015
R5009
Q5001
Q5010
R5016
R5017
C5008
C5005
R5003
R5024
C5011
C5022
R5010
R2035
R2039
R2040
R2036
R2038
R2041
R2037
R2034
C2035
R2033
C2033
C2042
C2039
R2043
R2001
C2002
VR2001
PG SHIFTER
C2070
C2071
C2031
C2038
C2041
C2040
C2032
P2002
C2055
FL3002
FL8001
L3011
R3036
C3029
R3037
C3028
C2020
C2018
C2006
C8014
R2047
C2050
C2051
VR2002
R2016

# LUMINANCE, CHROMINANCE & HEAD AMP Section In Main Circuit Board (VEP03380B1)

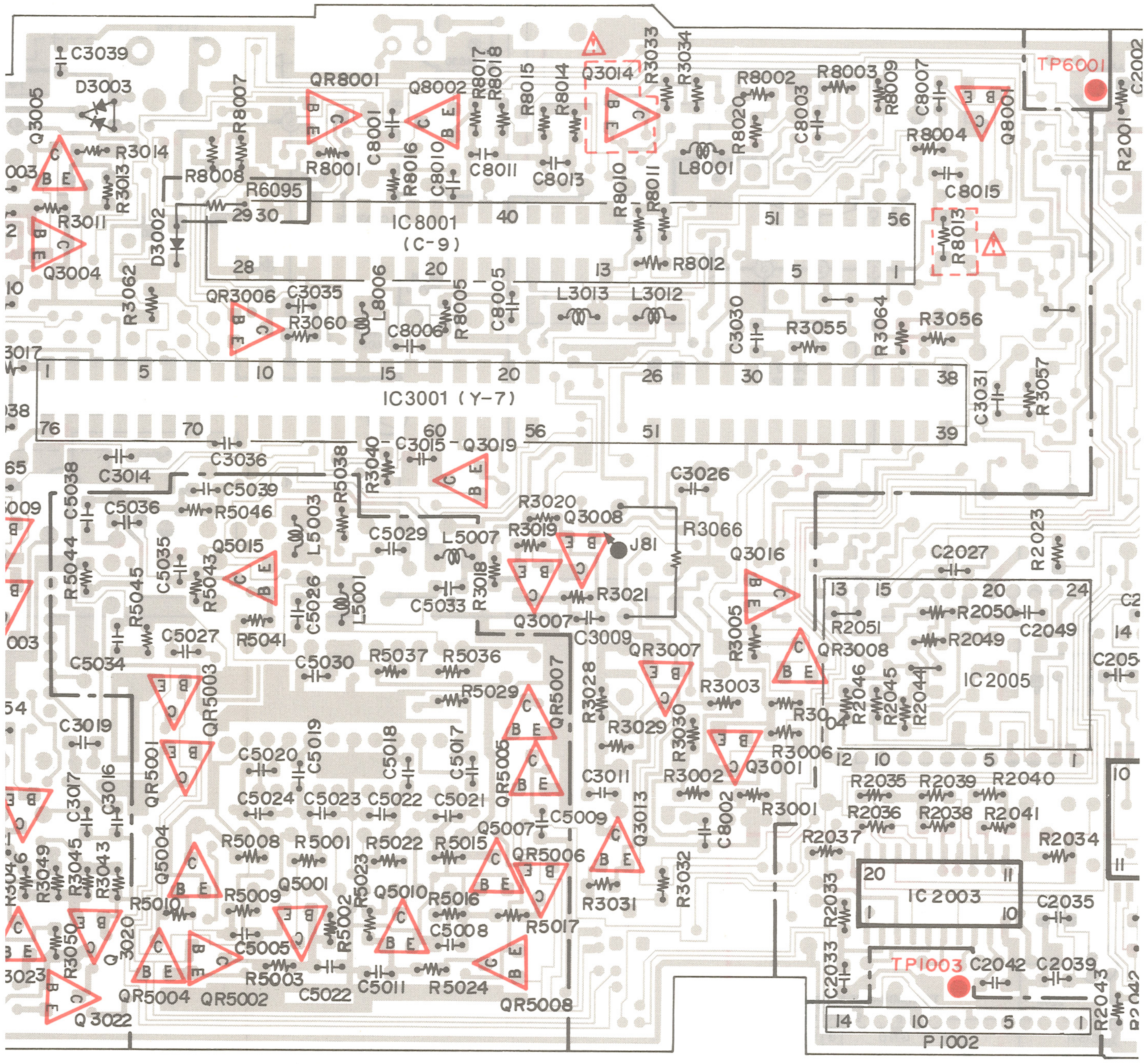


(FOIL SIDE)

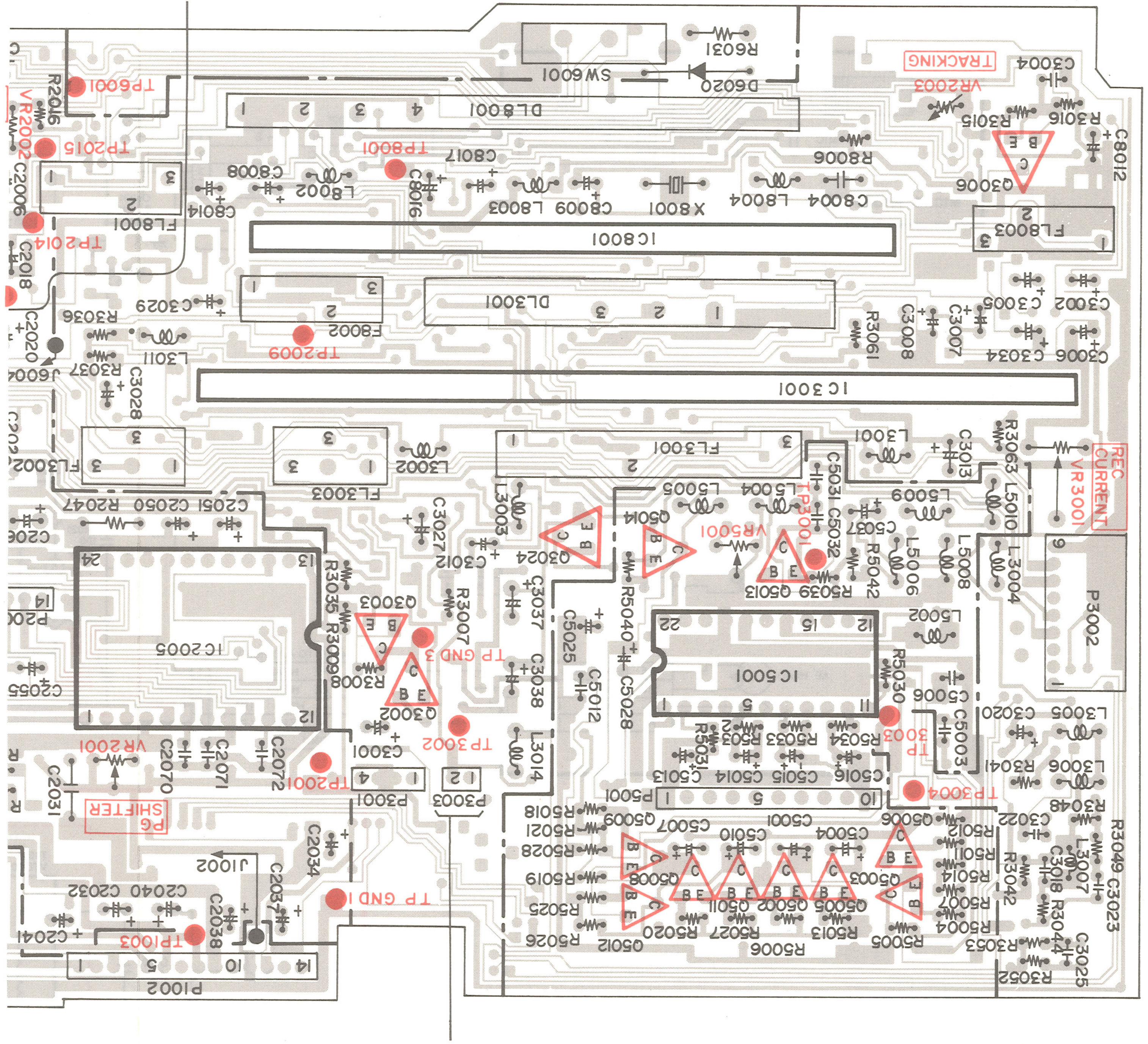


(COMPONENT SIDE)

## MAIN C.B.A. (VEP03380B1) (FOIL SIDE)


IC8001 (C-9)
IC3001 (Y-7)
IC2005
IC2003
P1002
TP6001
TP1003
QR8001
Q8002
Q3014
Q3019
Q3008
Q3016
Q3007
QR3007
QR3008
Q3001
Q5015
Q5007
QR5006
Q5001
Q5010
QR5004
QR5002
QR5008
Q3022
J81
L8001
L3013
L3012
L5007
R8013

## MAIN C.B.A. (VEP03380B1) (COMPONENT SIDE)

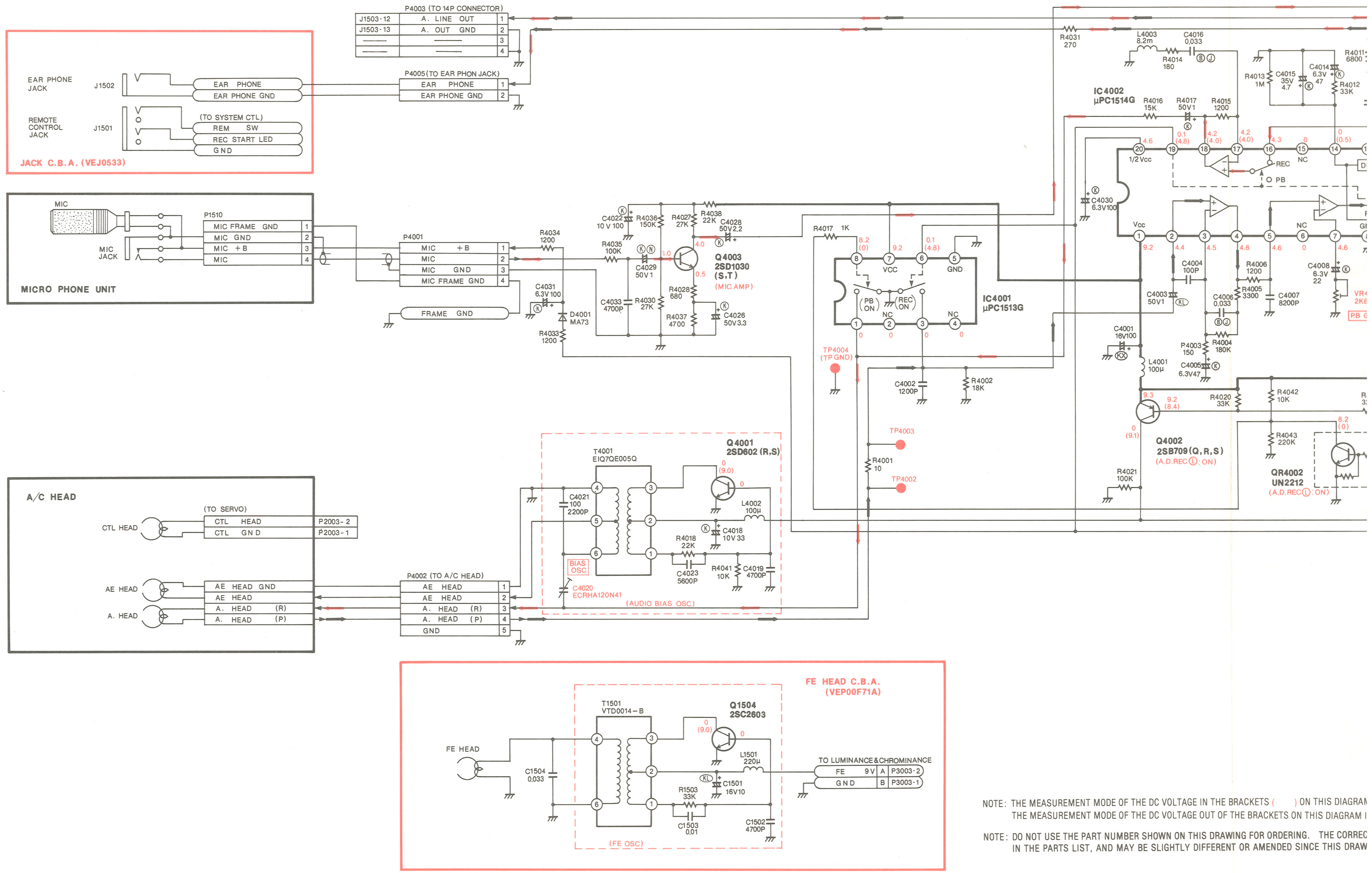

TRACKING
VR2003
REC CURRENT
VR3001
VR5001
VR2001
PG SHIFTER
IC8001
IC3001
IC2005
IC5001
DL8001
DL3001
FL8001
FL8003
FL3001
FL3002
FL3003
SW6001
TP6001
TP2015
TP8001
TP2014
TP2009
TP GND 3
TP3002
TP1001
TP GND 1
TP1003
TP3004
TP303
P1002
P3002
P3003
J1002
X8001

Next Page:
AUDIO Section

# 3-23. AUDIO SCHEMATIC DIAGRAM

MAIN SIGNAL PATH IN REC MODE

MAIN SIGNAL PATH IN PLAYBACK MODE

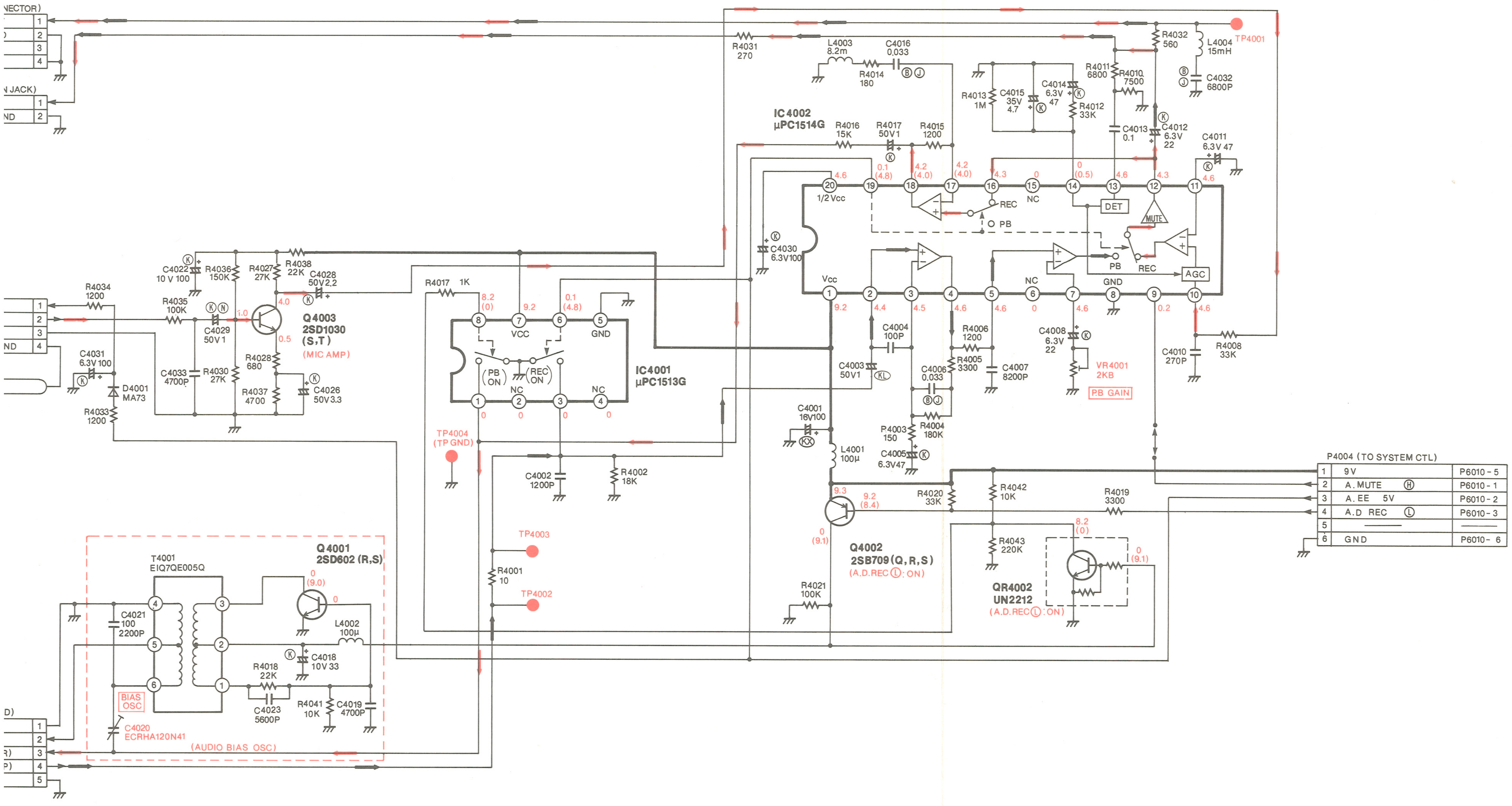


P4003 (TO 14P CONNECTOR)
J1503-12
A. LINE OUT
J1503-13
A. OUT GND
P4005 (TO EAR PHON JACK)
EAR PHONE
EAR PHONE GND
EAR PHONE JACK
J1502
REMOTE CONTROL JACK
J1501
(TO SYSTEM CTL)
REM SW
REC START LED
GND
JACK C.B.A. (VEJ0533)
MIC
P1510
MIC FRAME GND
MIC GND
MIC +B
MIC JACK
MICRO PHONE UNIT
P4001
MIC +B
MIC
MIC GND
MIC FRAME GND
FRAME GND
R4034 1200
C4031 6.3V 100
D4001 MA73
R4033 1200
C4022 10V 100
R4035 100K
R4036 150K
C4029 50V1
C4033 4700P
R4030 27K
R4027 27K
R4038 22K
C4028 50V2.2
R4028 680
R4037 4700
C4026 50V3.3
Q4003 2SD1030 (S,T)
(MIC AMP)
R4017 1K
IC4001 μPC1513G
VCC
GND
NC
(PB ON)
(REC ON)
TP4004 (TP GND)
C4002 1200P
R4002 18K
TP4003
R4001 10
TP4002
R4031 270
L4003 8.2m
C4016 0.033
R4014 180
R4013 1M
C4015 35V 4.7
C4014 6.3V 47
R4011 6800
R4012 33K
IC4002 μPC1514G
R4016 15K
R4017 50V1
R4015 1200
1/2 Vcc
REC
PB
NC
C4030 6.3V100
Vcc
C4004 100P
C4003 50V1
R4006 1200
R4005 3300
C4006 0.033
C4007 8200P
C4008 6.3V 22
R4004 180K
P4003 150
C4005 6.3V47
C4001 16V100
L4001 100μ
R4020 33K
R4042 10K
R4043 220K
R4021 100K
Q4002 2SB709 (Q,R,S)
(A.D.REC Ⓛ: ON)
QR4002 UN2212
(A.D.REC Ⓛ: ON)
PB
T4001 EIQ7QE005Q
Q4001 2SD602 (R,S)
C4021 100 2200P
L4002 100μ
C4018 10V 33
R4018 22K
C4023 5600P
R4041 10K
C4019 4700P
BIAS OSC
C4020 ECRHA120N41
(AUDIO BIAS OSC)
A/C HEAD
(TO SERVO)
CTL HEAD
CTL GND
P2003-2
P2003-1
AE HEAD GND
AE HEAD
A. HEAD (R)
A. HEAD (P)
P4002 (TO A/C HEAD)
GND
FE HEAD C.B.A. (VEP00F71A)
T1501 VTD0014-B
Q1504 2SC2603
FE HEAD
C1504 0.033
L1501 220μ
C1501 16V10
R1503 33K
C1503 0.01
C1502 4700P
(FE OSC)
TO LUMINANCE & CHROMINANCE
FE 9V A P3003-2
GND B P3003-1

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS (     ) ON THIS DIAGRAM
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM I

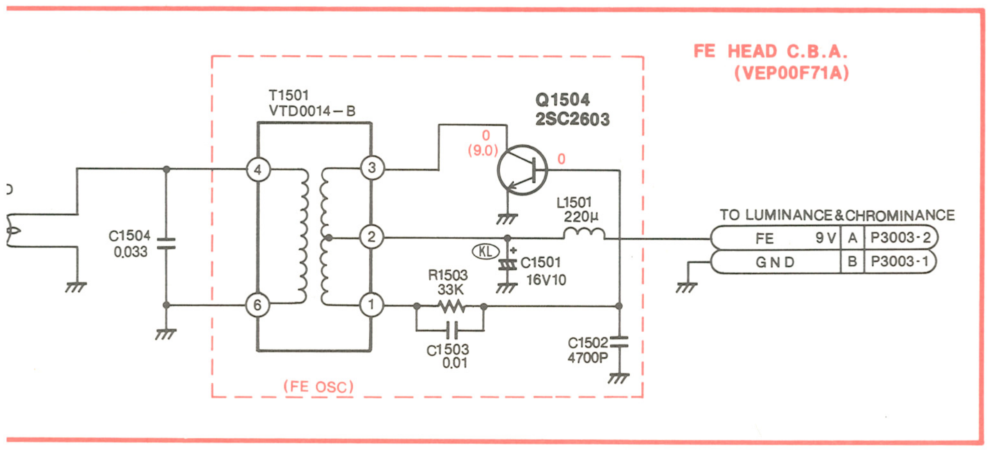
NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORREC
IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAW

MAIN SIGNAL PATH IN REC MODE    MAIN SIGNAL PATH IN PLAYBACK MODE



IC4002
μPC1514G
IC4001
μPC1513G
Q4003
2SD1030
(S,T)
(MIC AMP)
Q4002
2SB709(Q,R,S)
(A.D.REC Ⓛ: ON)
QR4002
UN2212
(A.D.REC Ⓛ: ON)
Q4001
2SD602 (R,S)
T4001
EIQ7QE005Q
BIAS OSC
C4020
ECRHA120N41
(AUDIO BIAS OSC)
TP4001
TP4002
TP4003
TP4004
(TP GND)
VR4001
2KB
PB GAIN
P4004 (TO SYSTEM CTL)
1 9V P6010-5
2 A.MUTE Ⓗ P6010-1
3 A.EE 5V P6010-2
4 A.D REC Ⓛ P6010-3
5
6 GND P6010-6
R4031 270
L4003 8.2m
C4016 0.033
R4014 180
R4032 560
L4004 15mH
C4032 6800P
R4011 6800
R4010 7500
R4013 1M
C4015 35V 4.7
C4014 6.3V 47
R4012 33K
C4013 0.1
C4012 6.3V 22
C4011 6.3V 47
R4016 15K
R4017 50V1
R4015 1200
C4030 6.3V100
1/2 Vcc
REC
PB
NC
DET
MUTE
AGC
GND
Vcc
C4004 100P
R4006 1200
R4005 3300
C4006 0.033
C4007 8200P
C4008 6.3V 22
C4010 270P
R4008 33K
C4003 50V1
C4001 16V100
L4001 100μ
P4003 150
R4004 180K
C4005 6.3V47
R4020 33K
R4042 10K
R4019 3300
R4043 220K
R4021 100K
R4017 1K
C4002 1200P
R4002 18K
R4001 10
C4022 10V 100
R4036 150K
R4027 27K
R4038 22K
C4028 50V2.2
R4034 1200
R4035 100K
C4029 50V1
R4028 680
C4031 6.3V 100
D4001 MA73
C4033 4700P
R4030 27K
R4037 4700
C4026 50V3.3
R4033 1200
C4021 100 2200P
L4002 100μ
C4018 10V 33
R4018 22K
C4023 5600P
R4041 10K
C4019 4700P
PB ON
REC ON
VCC
NECTOR)
JACK)

## FE HEAD C.B.A. (VEP00F71A)

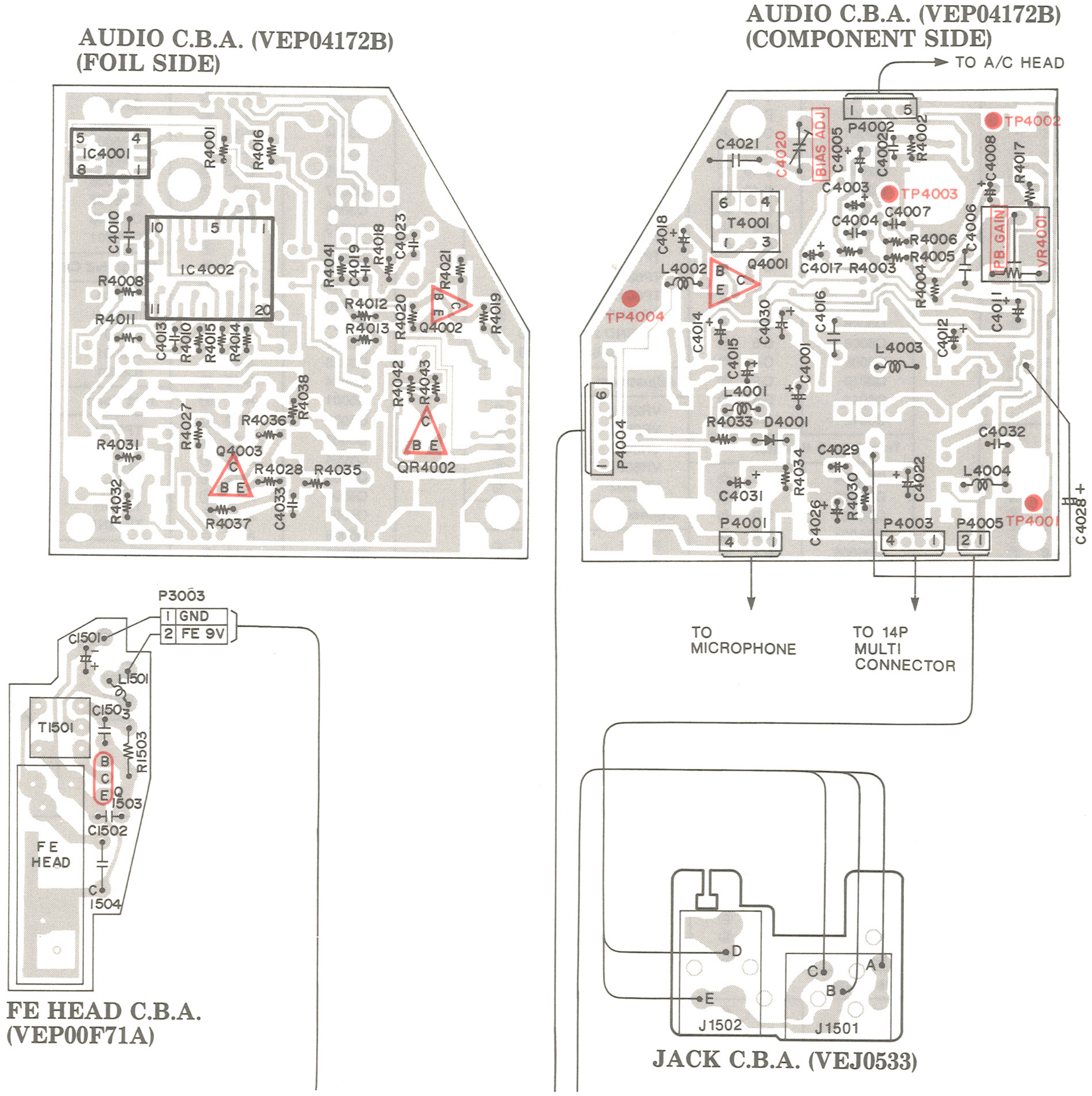


T1501
VTD0014-B
Q1504
2SC2603
L1501 220μ
C1504 0.033
C1501 16V10
R1503 33K
C1503 0.01
C1502 4700P
(FE OSC)
TO LUMINANCE&CHROMINANCE
FE 9V A P3003-2
GND B P3003-1

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE.
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE.

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

# 3-24. AUDIO CIRCUIT BOARD (VEP04172B)


AUDIO C.B.A. (VEP04172B)
(FOIL SIDE)

AUDIO C.B.A. (VEP04172B)
(COMPONENT SIDE)

FE HEAD C.B.A.
(VEP00F71A)

JACK C.B.A. (VEJ0533)

IC4001
IC4002
Q4002
Q4003
QR4002
R4001
R4016
C4010
R4008
R4011
C4013
R4010
R4015
R4014
R4041
C4019
R4018
C4023
R4021
R4012
R4013
R4020
R4019
R4042
R4043
R4036
R4038
R4027
R4031
R4028
R4035
R4032
R4037
C4033
TO A/C HEAD
P4002
C4021
C4020
BIAS ADJ
C4005
C4002
R4002
TP4002
C4003
TP4003
C4008
R4017
T4001
C4004
C4007
R4006
R4005
C4006
C4018
C4017
R4003
L4002
Q4001
R4004
PB. GAIN
VR4001
TP4004
C4014
C4015
C4030
C4016
C4001
L4003
C4012
C4011
P4004
L4001
R4033
D4001
C4032
C4029
C4022
L4004
C4031
R4034
R4030
C4026
C4028
P4001
P4003
P4005
TP4001
TO MICROPHONE
TO 14P MULTI CONNECTOR
P3003
GND
FE 9V
C1501
L1501
C1503
T1501
R1503
Q1503
C1502
FE HEAD
C1504
D
E
C
A
B
J1502
J1501

## AUDIO ICs VOLTAGE CHART

| REF. NO. / MODE | IC4001 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | | | | | | | | | |
| PLAY | 0 | 0 | 0 | 0 | 0 | 0.1 | 9.2 | 8.2 | | | | | | | | | | | | |
| REC | 0 | 0 | 0 | 0 | 0 | 4.8 | 9.2 | 0 | | | | | | | | | | | | |
| REF. NO. / MODE | IC4002 | | | | | | | | | | | | | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| PLAY | 9.2 | 4.4 | 4.5 | 4.6 | 4.6 | 0 | 4.6 | 0 | 0.2 | 4.6 | 4.6 | 4.3 | 4.6 | 0 | 0 | 4.3 | 4.2 | 4.2 | 0.1 | 4.6 |
| REC | 9.2 | 4.4 | 4.5 | 4.6 | 4.6 | 0 | 4.6 | 0 | 0.2 | 4.6 | 4.6 | 4.3 | 4.6 | 0.5 | 0 | 4.3 | 4.0 | 4.0 | 4.8 | 4.6 |

## AUDIO TRs VOLTAGE CHART

| REF. NO. / MODE | Q1504 | | | Q4001 | | | Q4002 | | | Q4003 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | E | C | B | E | C | B | E | C | B | E | C | B | | | | | | |
| PLAY | 0 | 0 | 0 | 0 | 0 | 0 | 9.3 | 0 | 9.2 | 0.5 | 4.0 | 1.0 | | | | | | |
| REC | 0 | 9.0 | 0 | 0 | 9.0 | 0 | 9.3 | 9.1 | 8.4 | 0.5 | 4.0 | 1.0 | | | | | | |
| REF. NO. / MODE | QR4002 | | | | | | | | | | | | | | | | | |
| | E | C | B | | | | | | | | | | | | | | | |
| PLAY | 0 | 8.2 | 0 | | | | | | | | | | | | | | | |
| REC | 0 | 0 | 9.1 | | | | | | | | | | | | | | | |

# MAIN CIRCUIT BOARD ADDRESS INFORMATIONS

### POWER SUPPLY Section

**Transistor**

| | |
|---|---|
| Q1001 | A-5 Ⓕ |
| Q1002 | B-10 Ⓒ |
| Q1003 | A-9 Ⓒ |
| Q1004 | B-6 Ⓕ |
| Q1005 | B-5 Ⓕ |
| Q1006 | B-4 Ⓕ |

**Transistor & Resistor**

| | |
|---|---|
| QR1001 | B-4 Ⓕ |
| QR1002 | B-4 Ⓕ |
| QR1501 | B-7 |

**Integrated Circuit**

| | |
|---|---|
| IC1001 | A-8 Ⓒ |
| IC1002 | A-9 Ⓒ |
| IC1003 | A-9 Ⓒ |
| IC1004 | A-4 Ⓕ |

**Test Point**

| | |
|---|---|
| TP1001 | B-4 Ⓕ |
| TP1001 | B-9 Ⓒ |
| TP1002 | A-4 Ⓕ |
| TP1002 | A-10 Ⓒ |
| TP1003 | A-3 Ⓕ |
| TP1003 | A-11 Ⓒ |
| TP1004 | A-6 Ⓕ |
| TP1004 | A-8 Ⓒ |

**Adjustment**

| | |
|---|---|
| VR1001 | A-9 Ⓒ |
| VR1002 | B-9 Ⓒ |
| VR1003 | A-9 Ⓒ |

**Connector**

| | |
|---|---|
| P1001 | A-8 Ⓒ |
| P1002 | A-3 Ⓕ |
| P1002 | A-11 Ⓒ |
| P1507 | A-7 |

ADDRESS INFORMATION
Ⓒ ··· COMPONENT SIDE
Ⓕ ··· FOIL SIDE

### SERVO & SYSTEM CONTROL Section

**Transistor**

| | |
|---|---|
| Q1501 | D-10 |
| Q1502 | D-10 |
| Q1503 | D-11 Ⓕ |
| Q2001 | C-4 Ⓕ |
| Q2002 | A-10 Ⓒ |
| Q2003 | B-10 Ⓒ |
| Q2004 | B-10 Ⓒ |
| Q2006 | B-10 Ⓒ |
| Q6001 | B-4 Ⓕ |
| Q6002 | C-5 Ⓕ |
| Q6003 | C-5 Ⓕ |
| Q6004 | C-5 Ⓕ |
| Q6005 | C-9 Ⓒ |
| Q6006 | B-4 Ⓕ |
| Q6008 | B-5 Ⓕ |
| Q6009 | C-8 Ⓒ |
| Q6010 | C-9 Ⓒ |
| Q6011 | B-4 Ⓕ |
| Q6012 | B-4 Ⓕ |

**Transistor & Resistor**

| | |
|---|---|
| QR6001 | C-8 Ⓒ |
| QR6002 | C-8 Ⓒ |
| QR6003 | C-9 Ⓒ |
| QR6004 | B-9 Ⓒ |
| QR6005 | B-4 Ⓕ |
| QR6006 | B-5 Ⓕ |
| QR6008 | B-4 Ⓕ |
| QR6009 | C-9 Ⓒ |
| QR6017 | B-9 Ⓒ |
| QR6019 | B-5 Ⓕ |
| QR6020 | C-5 Ⓕ |

**Integrated Circuit**

| | |
|---|---|
| IC2001 | C-10 Ⓒ |
| IC2002 | C-3 Ⓕ |
| IC2003 | A-3 Ⓕ |
| IC2004 | A-3 Ⓕ |
| IC2005 | B-3 Ⓕ |
| IC2005 | B-11 Ⓒ |
| IC2006 | B-3 Ⓕ |
| IC2007 | C-10 Ⓒ |
| IC6001 | B-5 Ⓕ |
| IC6002 | B-8 Ⓒ |
| IC6003 | C-9 Ⓒ |
| IC6004 | C-8 Ⓒ |
| IC6005 | B-9 Ⓒ |

**Test Point**

| | |
|---|---|
| TP2001 | A-11 Ⓒ |
| TP2002 | B-10 Ⓒ |
| TP2003 | B-10 Ⓒ |
| TP2004 | C-10 Ⓒ |
| TP2009 | B-11 Ⓒ |
| TP2014 | C-10 Ⓒ |
| TP2015 | C-10 Ⓒ |
| TP6001 | C-3 Ⓕ |
| TP6001 | C-11 Ⓒ |
| TP6002 | B-6 Ⓕ |
| TP6002 | B-8 Ⓒ |
| TP6003 | C-5 Ⓕ |
| TP6003 | C-9 Ⓒ |
| TP6004 | B-6 Ⓕ |
| TP6004 | B-8 Ⓒ |
| TP6005 | C-4 Ⓕ |
| TP6005 | C-9 Ⓒ |
| TP6006 | B-4 Ⓕ |
| TP6006 | B-9 Ⓒ |
| TP6007 | C-5 Ⓕ |
| TP6007 | C-9 Ⓒ |
| TP GND 1 | A-11 Ⓒ |
| TP GND 2 | A-10 Ⓒ |
| TP GND 6 | B-10 Ⓒ |

**Adjustment**

| | |
|---|---|
| VR2001 | A-11 Ⓒ |
| VR2002 | C-10 Ⓒ |
| VR2003 | C-12 Ⓒ |
| VR6001 | B-8 Ⓒ |
| VR6002 | B-10 Ⓒ |

**Connector**

| | |
|---|---|
| P1501 | D-12 Ⓒ |
| P1502 | D-12 Ⓒ |
| P1504 | D-13 Ⓒ |
| P1505 | D-12 Ⓒ |
| P1506 | D-13 Ⓒ |
| P1511 | C-6 |
| P1511 | C-6 |
| P2001 | A-3 Ⓕ |
| P2001 | A-10 Ⓒ |
| P2002 | B-10 Ⓒ |
| P2003 | B-10 Ⓒ |
| P6001 | B-8 Ⓒ |
| P6002 | B-8 Ⓒ |
| P6003 | C-9 Ⓒ |
| P6004 | C-9 Ⓒ |
| P6005 | B-9 Ⓒ |
| P6006 | B-8 Ⓒ |
| P6007 | C-8 Ⓒ |
| P6008 | B-9 Ⓒ |
| P6009 | B-9 Ⓒ |
| P6010 | B-8 Ⓒ |
| P6011 | B-8 Ⓒ |
| P6012 | C-9 Ⓒ |
| P6301 | D-7 |
| P6302 | D-6 |
| P6801 | D-2 |
| P6802 | D-2 |
| P6803 | D-5 |
| P6804 | D-4 |

ADDRESS INFORMATION
Ⓒ ··· COMPONENT SIDE
Ⓕ ··· FOIL SIDE

### LUMINANCE, CHROMINANCE & HEAD AMP Section

**Transistor**

| | |
|---|---|
| Q3001 | B-2 Ⓕ |
| Q3002 | B-11 Ⓒ |
| Q3003 | B-11 Ⓒ |
| Q3004 | C-1 Ⓕ |
| Q3005 | C-1 Ⓕ |
| Q3006 | C-13 Ⓒ |
| Q3007 | B-2 Ⓕ |
| Q3008 | B-2 Ⓕ |
| Q3013 | A-2 Ⓕ |
| Q3014 | C-2 Ⓕ |
| Q3016 | B-2 Ⓕ |
| Q3019 | B-2 Ⓕ |
| Q3020 | A-1 Ⓕ |
| Q3021 | A-1 Ⓕ |
| Q3022 | A-1 Ⓕ |
| Q3023 | A-1 Ⓕ |
| Q3024 | B-12 Ⓒ |
| Q5001 | A-1 Ⓕ |
| Q5002 | A-12 Ⓒ |
| Q5003 | A-12 Ⓒ |
| Q5004 | A-1 Ⓕ |
| Q5005 | A-12 Ⓒ |
| Q5006 | A-12 Ⓒ |
| Q5007 | A-2 Ⓕ |
| Q5008 | A-12 Ⓒ |
| Q5009 | A-12 Ⓒ |
| Q5010 | A-2 Ⓕ |
| Q5011 | A-12 Ⓒ |
| Q5012 | A-12 Ⓒ |
| Q5013 | B-12 Ⓒ |
| Q5014 | B-12 Ⓒ |
| Q5015 | B-1 Ⓕ |
| Q8001 | C-3 Ⓕ |
| Q8002 | C-2 Ⓕ |

**Transistor & Resistor**

| | |
|---|---|
| QR3003 | B-1 Ⓕ |
| QR3006 | C-1 Ⓕ |
| QR3007 | B-2 Ⓕ |
| QR3008 | B-3 Ⓕ |
| QR3009 | B-1 Ⓕ |
| QR5001 | B-1 Ⓕ |
| QR5002 | A-1 Ⓕ |
| QR5003 | B-1 Ⓕ |
| QR5004 | A-1 Ⓕ |
| QR5005 | B-2 Ⓕ |
| QR5006 | A-2 Ⓕ |
| QR5007 | B-2 Ⓕ |
| QR5008 | A-2 Ⓕ |
| QR8001 | C-2 Ⓕ |

**Integrated Circuit**

| | |
|---|---|
| IC3001 | B-2 Ⓕ |
| IC3001 | B-12 Ⓒ |
| IC5001 | B-12 Ⓒ |
| IC8001 | C-2 Ⓕ |
| IC8001 | C-12 Ⓒ |

**Test Point**

| | |
|---|---|
| TP3001 | B-12 Ⓒ |
| TP3002 | B-11 Ⓒ |
| TP3003 | B-12 Ⓒ |
| TP3004 | A-12 Ⓒ |
| TP8001 | C-11 Ⓒ |
| TP GND 3 | B-11 Ⓒ |

**Adjustment**

| | |
|---|---|
| VR3001 | B-12 Ⓒ |
| VR5001 | B-12 Ⓒ |

**Connector**

| | |
|---|---|
| P3001 | A-11 Ⓒ |
| P3002 | B-13 Ⓒ |
| P3003 | A-11 Ⓒ |
| P5001 | A-12 Ⓒ |

ADDRESS INFORMATION
Ⓒ ··· COMPONENT SIDE
Ⓕ ··· FOIL SIDE

### AUDIO C.B.A.

**Transistor**

| | |
|---|---|
| Q1503 | B-13 |
| Q4001 | C-15 Ⓒ |
| Q4002 | C-14 Ⓕ |
| Q4003 | B-14 Ⓕ |

**Transistor & Resistor**

| | |
|---|---|
| QR4002 | C-14 Ⓕ |

**Integrated Circuit**

| | |
|---|---|
| IC4001 | C-13 Ⓕ |
| IC4002 | C-14 Ⓕ |

**Test Point**

| | |
|---|---|
| TP4001 | B-15 Ⓒ |
| TP4002 | C-15 Ⓒ |
| TP4003 | C-15 Ⓒ |
| TP4004 | C-15 Ⓒ |

**Adjustment**

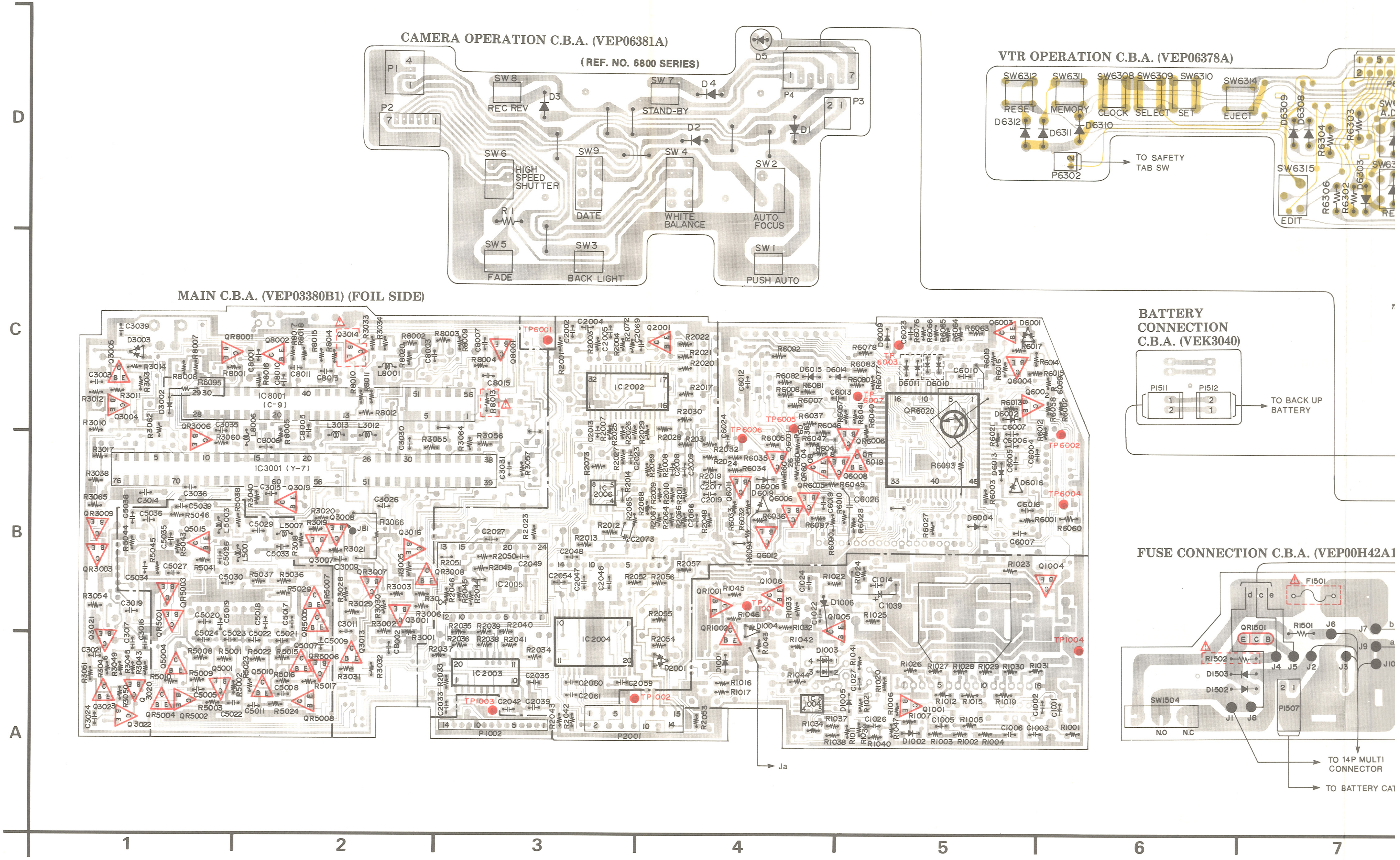
| | |
|---|---|
| VR4001 | C-15 Ⓒ |
| C4020 | C-15 Ⓒ |

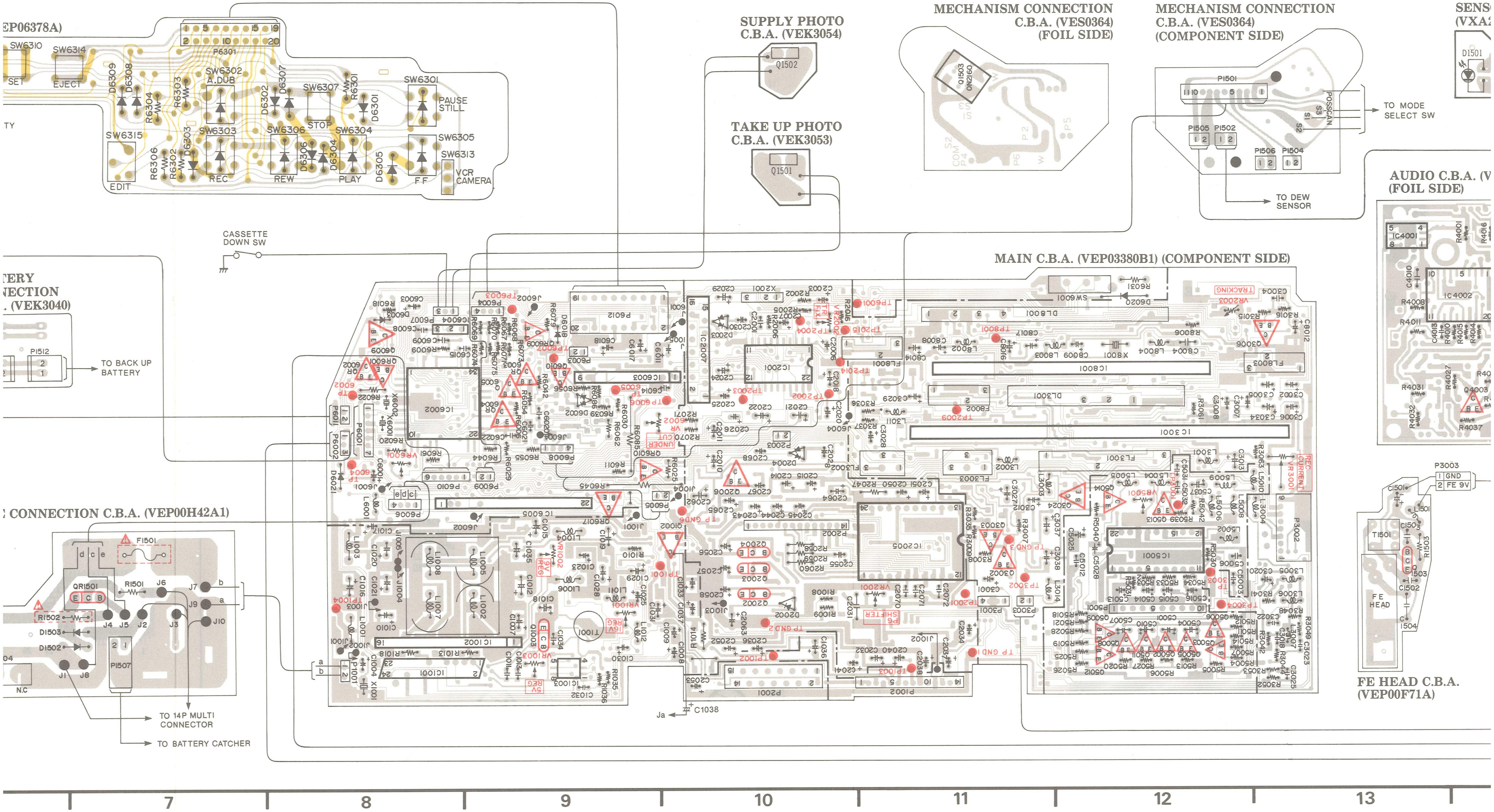
**Connector**

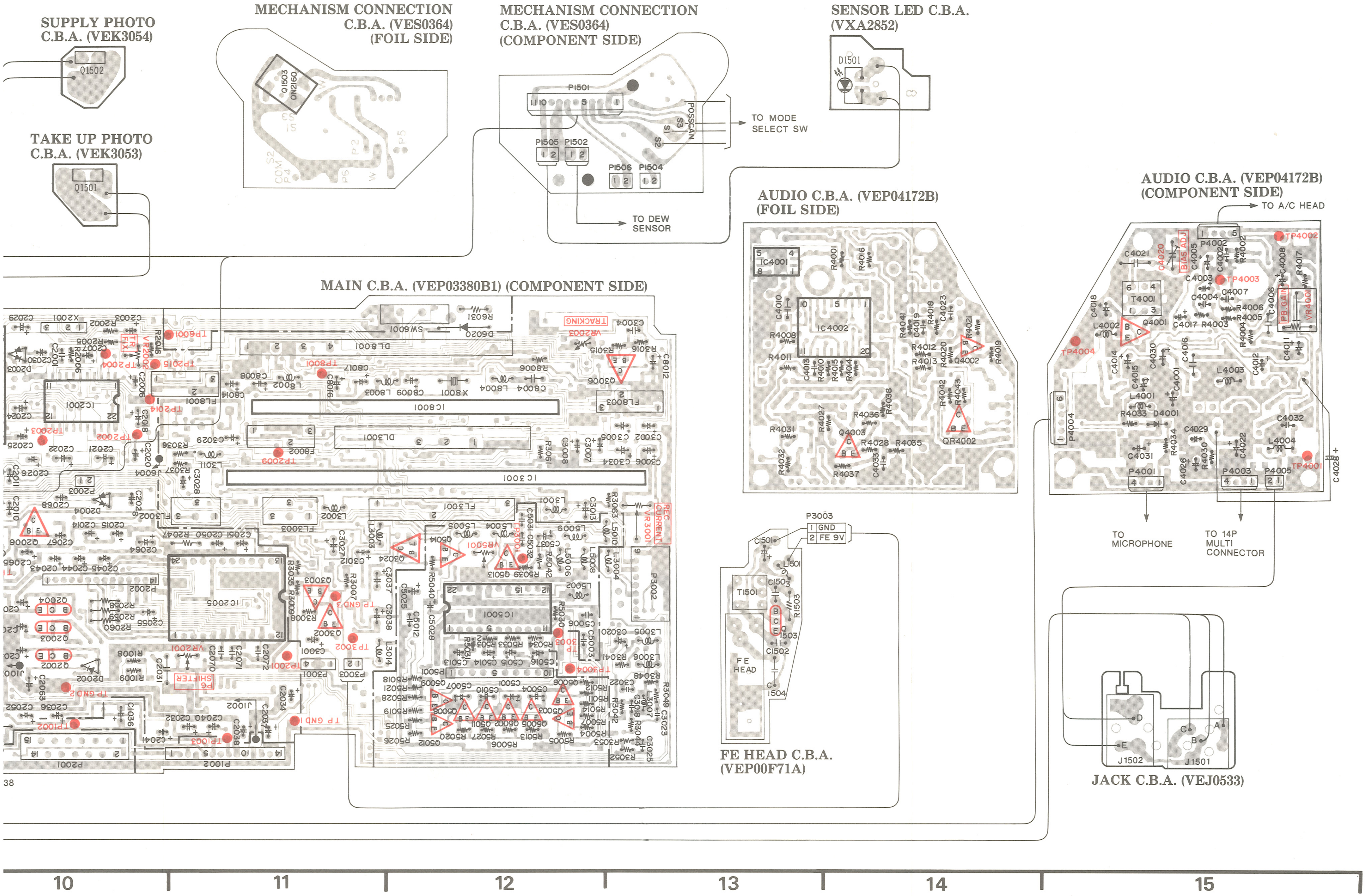
| | |
|---|---|
| P4001 | B-15 Ⓒ |
| P4002 | C-15 Ⓒ |
| P4003 | B-15 Ⓒ |
| P4004 | C-15 Ⓒ |
| P4005 | B-15 Ⓒ |

ADDRESS INFORMATION
Ⓒ ··· COMPONENT SIDE
Ⓕ ··· FOIL SIDE

## 3-25. MAIN CIRCUIT BOARD (VEP03380B1)


CAMERA OPERATION C.B.A. (VEP06381A)
(REF. NO. 6800 SERIES)
SW 8 REC REV
SW 7 STAND-BY
SW 6 HIGH SPEED SHUTTER
SW 9 DATE
SW 4 WHITE BALANCE
SW 2 AUTO FOCUS
SW 5 FADE
SW 3 BACK LIGHT
SW 1 PUSH AUTO
VTR OPERATION C.B.A. (VEP06378A)
SW6312 RESET
SW6311 MEMORY
SW6308 CLOCK
SW6309 SELECT
SW6310 SET
SW6314 EJECT
SW6315 EDIT
TO SAFETY TAB SW
MAIN C.B.A. (VEP03380B1) (FOIL SIDE)
IC3001 (Y-7)
IC8001 (C-9)
IC2002
IC2004
IC2005
IC2003
QR6020
BATTERY CONNECTION C.B.A. (VEK3040)
TO BACK UP BATTERY
FUSE CONNECTION C.B.A. (VEP00H42A1
F1501
TO 14P MULTI CONNECTOR
TO BATTERY CAT
Ja
D
C
B
A
1
2
3
4
5
6
7

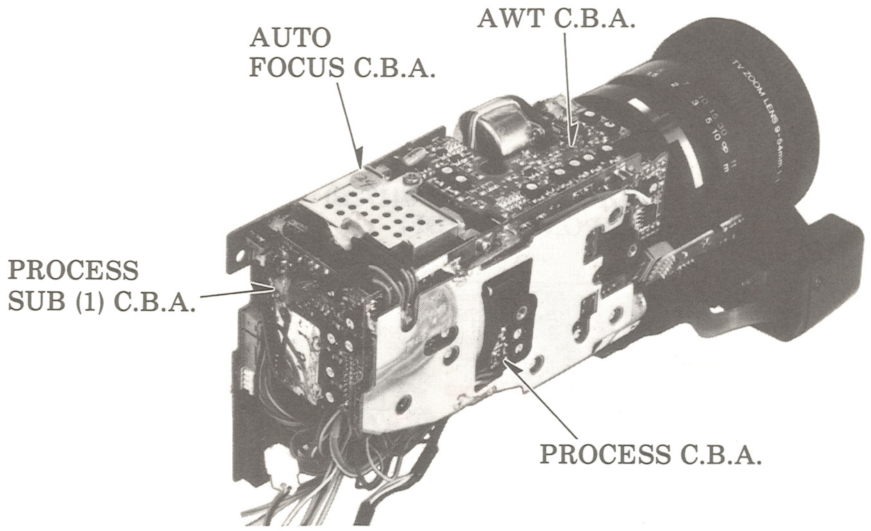

EP06378A)
SUPPLY PHOTO C.B.A. (VEK3054)
TAKE UP PHOTO C.B.A. (VEK3053)
MECHANISM CONNECTION C.B.A. (VES0364) (FOIL SIDE)
MECHANISM CONNECTION C.B.A. (VES0364) (COMPONENT SIDE)
SENS
(VXA
AUDIO C.B.A. (V
(FOIL SIDE)
MAIN C.B.A. (VEP03380B1) (COMPONENT SIDE)
TERY
NECTION
. (VEK3040)
CONNECTION C.B.A. (VEP00H42A1)
FE HEAD C.B.A. (VEP00F71A)
CASSETTE DOWN SW
TO MODE SELECT SW
TO DEW SENSOR
TO BACK UP BATTERY
TO 14P MULTI CONNECTOR
TO BATTERY CATCHER
SET
EJECT
A.DUB
PAUSE STILL
STOP
REC
REW
PLAY
F.F
EDIT
VCR CAMERA
SW6310
SW6314
SW6302
SW6307
SW6301
SW6315
SW6303
SW6306
SW6304
SW6305
SW6313
P6301
Q1502
Q1501
P1501
P1505
P1502
P1506
P1504
D1501
IC4001
IC4002
P1512
P3003
FE HEAD
T1501
F1501
QR1501
R1501
R1502
D1503
D1502
P1507
N.C
Ja
C1038
TRACKING
REC CURRENT
UNDER CUT
TP GND
TP GND
7
8
9
10
11
12
13


SUPPLY PHOTO C.B.A. (VEK3054)
Q1502
TAKE UP PHOTO C.B.A. (VEK3053)
Q1501
MECHANISM CONNECTION C.B.A. (VES0364) (FOIL SIDE)
MECHANISM CONNECTION C.B.A. (VES0364) (COMPONENT SIDE)
P1501
P1505
P1502
P1506
P1504
TO MODE SELECT SW
TO DEW SENSOR
SENSOR LED C.B.A. (VXA2852)
D1501
AUDIO C.B.A. (VEP04172B) (FOIL SIDE)
AUDIO C.B.A. (VEP04172B) (COMPONENT SIDE)
TO A/C HEAD
TO MICROPHONE
TO 14P MULTI CONNECTOR
MAIN C.B.A. (VEP03380B1) (COMPONENT SIDE)
P3003
GND
FE 9V
FE HEAD
FE HEAD C.B.A. (VEP00F71A)
JACK C.B.A. (VEJ0533)
J1502
J1501
10
11
12
13
14
15

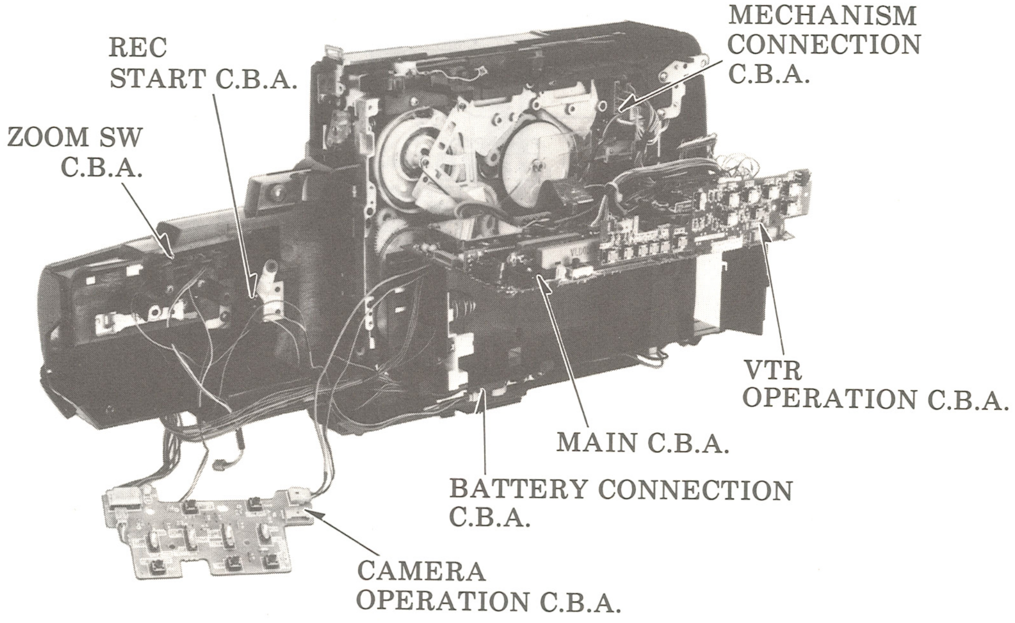
Next Page:
C.B. LAYOUT, ICs & TRs INFORMATION Section

## 3-26. CIRCUIT BOARD LAYOUT

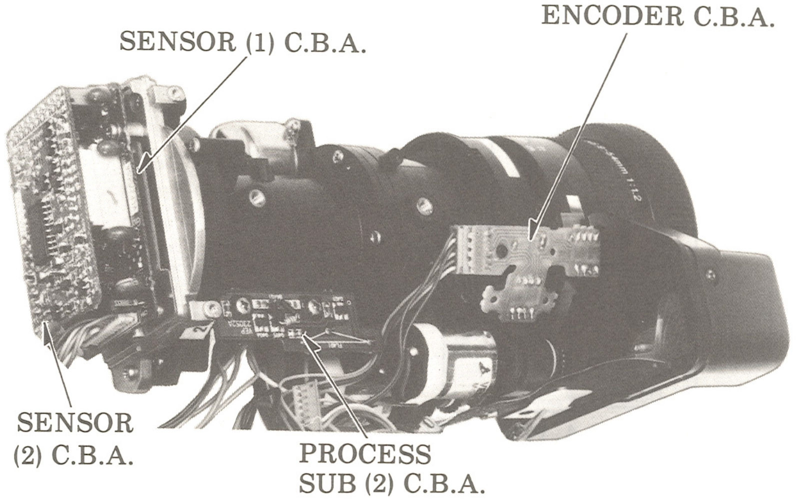
### CAMERA SECTION (1)


AUTO FOCUS C.B.A.
AWT C.B.A.
PROCESS SUB (1) C.B.A.
PROCESS C.B.A.

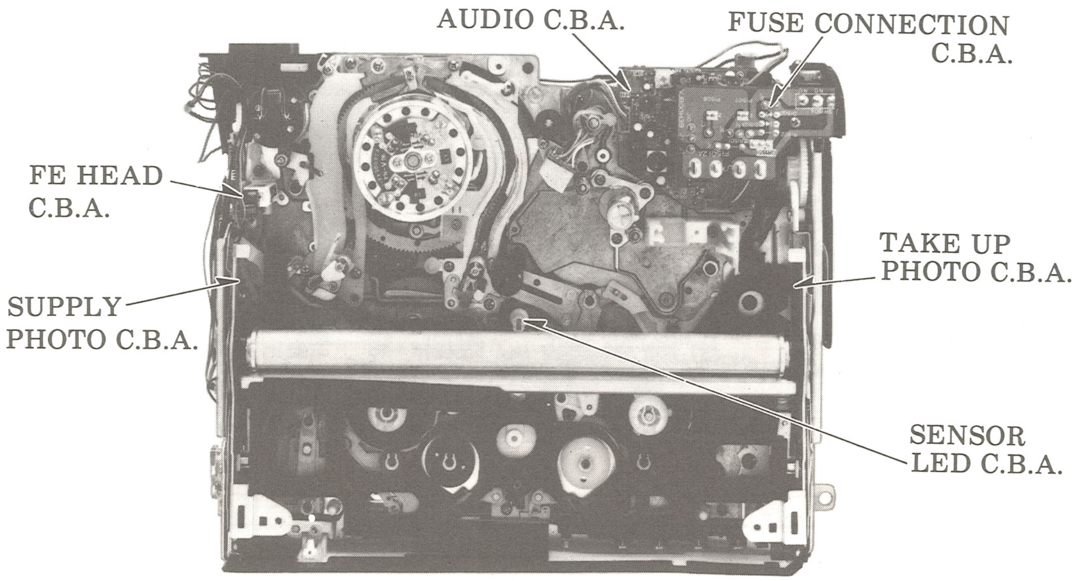
### VTR SECTION (1)


REC START C.B.A.
MECHANISM CONNECTION C.B.A.
ZOOM SW C.B.A.
VTR OPERATION C.B.A.
MAIN C.B.A.
BATTERY CONNECTION C.B.A.
CAMERA OPERATION C.B.A.

### CAMERA SECTION (2)

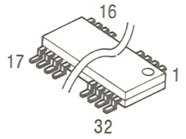

ENCODER C.B.A.
SENSOR (1) C.B.A.
SENSOR (2) C.B.A.
PROCESS SUB (2) C.B.A.

### VTR SECTION (2)

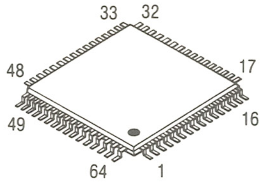

AUDIO C.B.A.
FUSE CONNECTION C.B.A.
FE HEAD C.B.A.
TAKE UP PHOTO C.B.A.
SUPPLY PHOTO C.B.A.
SENSOR LED C.B.A.

## 3-27. ICs & TRANSISTORs INFORMATION

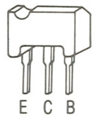
### GENERAL CIRCUIT PARTS



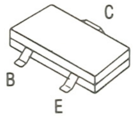
AN2151S
AN3796S


33
32
48
17
49
16
64
1

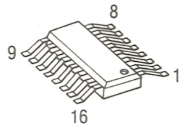
MN6176
MN15263VEG4
MN15862VEN



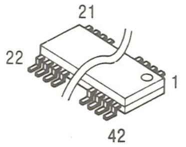
2SB819
2SB1264V
2SD662
2SD973A
2SD1526



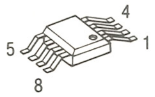
2SB709
2SB709A
2SB710
2SB779
2SB790
2SB956
2SC1621-T1B
2SC1621-T2B
2SC1684
2SC2404
2SC2405
2SC3757VT
2SD601
2SD602
2SD1030
2SD1328
NTM2907A
NTM3906-T1B



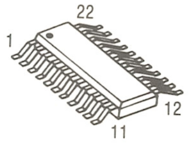
AN2010S
DN8700
AN2352S



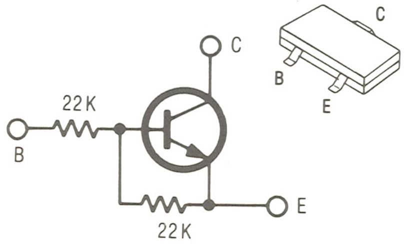
AN2582S
AN2251S
AN2351S



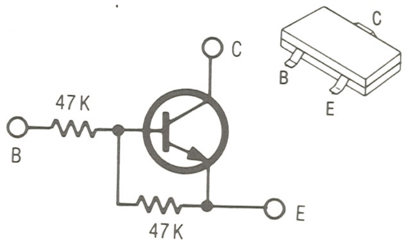
AN1358S
MN3805CS
MN3805YS
NJM2903M
NJM3415M
NJM4558M-P
µPC358G
µPC358G2
µPC1513G



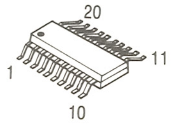
MN67604P
MN6179VBDS


C
C
22K
B
B
E
22K
E

UN2212

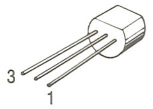

C
C
47K
B
B
E
47K
E

UN2213



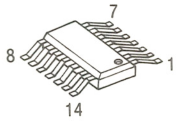
µPD6146G
µPC1542AG
µPC1514G

### AUTO FOCUS

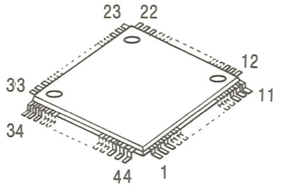


AN78L05

### PROCESS, PROCESS SUB (1) · (2) & AWT

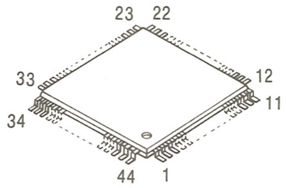


NJM2902M
µPD4066BG


23
22
12
33
11
34
44
1

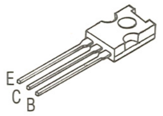
MN51005VZD

### SENSOR (1) & SENSOR (2)

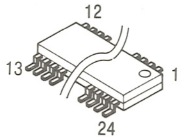

23
22
33
12
11
34
44
1

MN50007XAN
MN50010XA0
MN50015XAP

### E.V.F (A) & E.V.F (B)

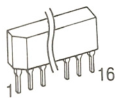


2SC3621

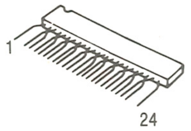


AN2510S

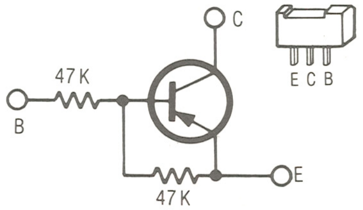
### POWER SUPPLY Section



UN102



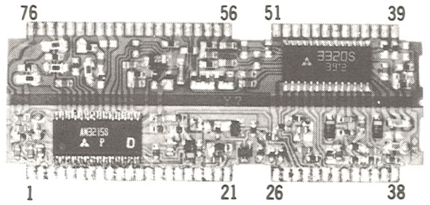
BA6149LS


C
E C B
47K
B
E
47K

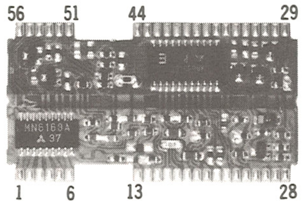
DTA144EA

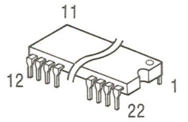
### LUMINANCE, CHROMINANCE & HEAD AMP Section

**VEFY007**

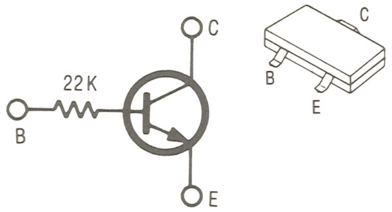

76
56
51
39
1
21
26
38

**VEFC009**

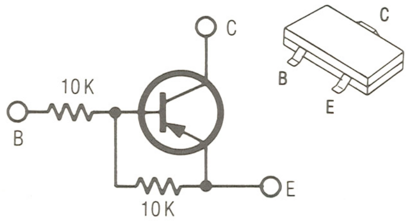

56
51
44
29
1
6
13
28



AN3311K

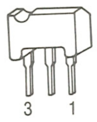


UN2217

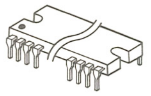

C
C
10K
B
B
E
10K
E

UN2111

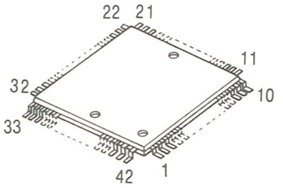
## SERVO & SYSTEM CONTROL Section



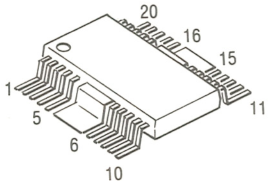
MN1280N



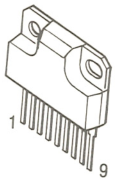
BA6430S


22
21
11
32
10
33
42
1

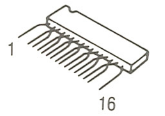
MN1237A


20
16
15
1
11
5
6
10

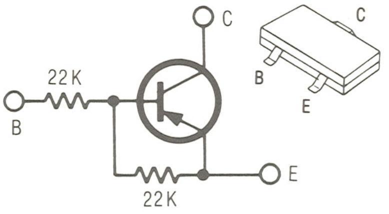
TA8402F



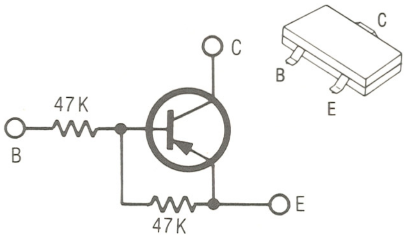
M54543L



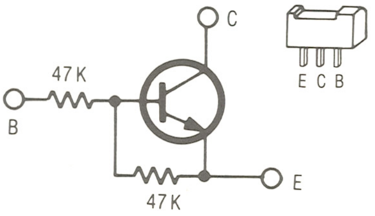
BAL6309


C
C
22K
B
B
E
E
22K

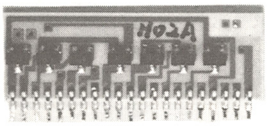
UN2112


C
C
B
47K
E
B
E
47K

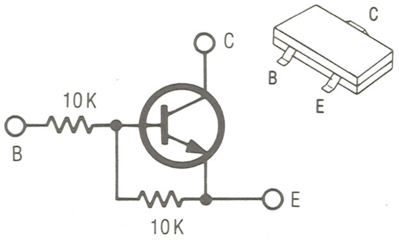
UN2113


C
47K
E C B
B
E
47K

DTC144EA

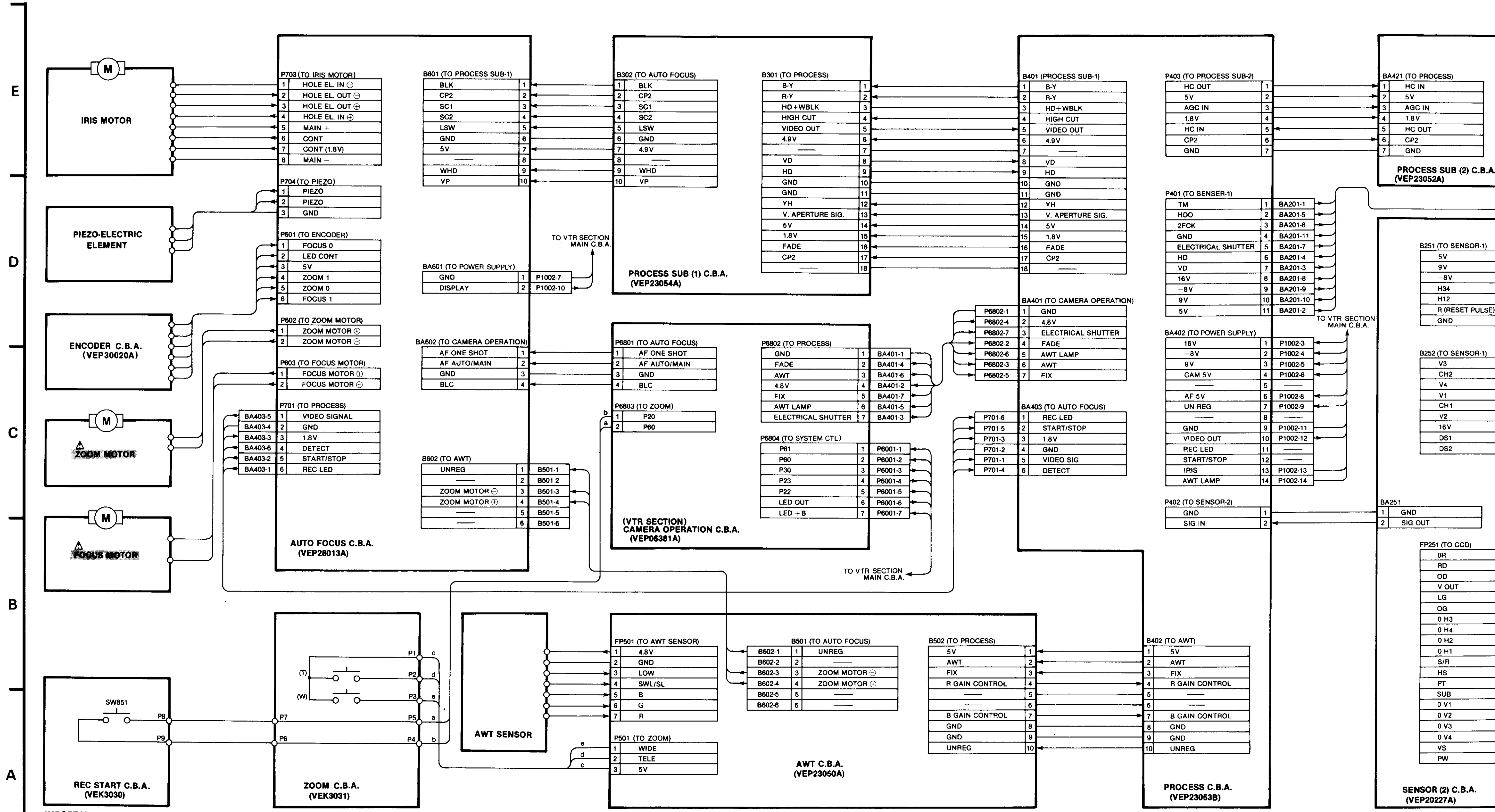


**VEFH02A**


C
C
10K
B
E
B
E
10K

UN2211

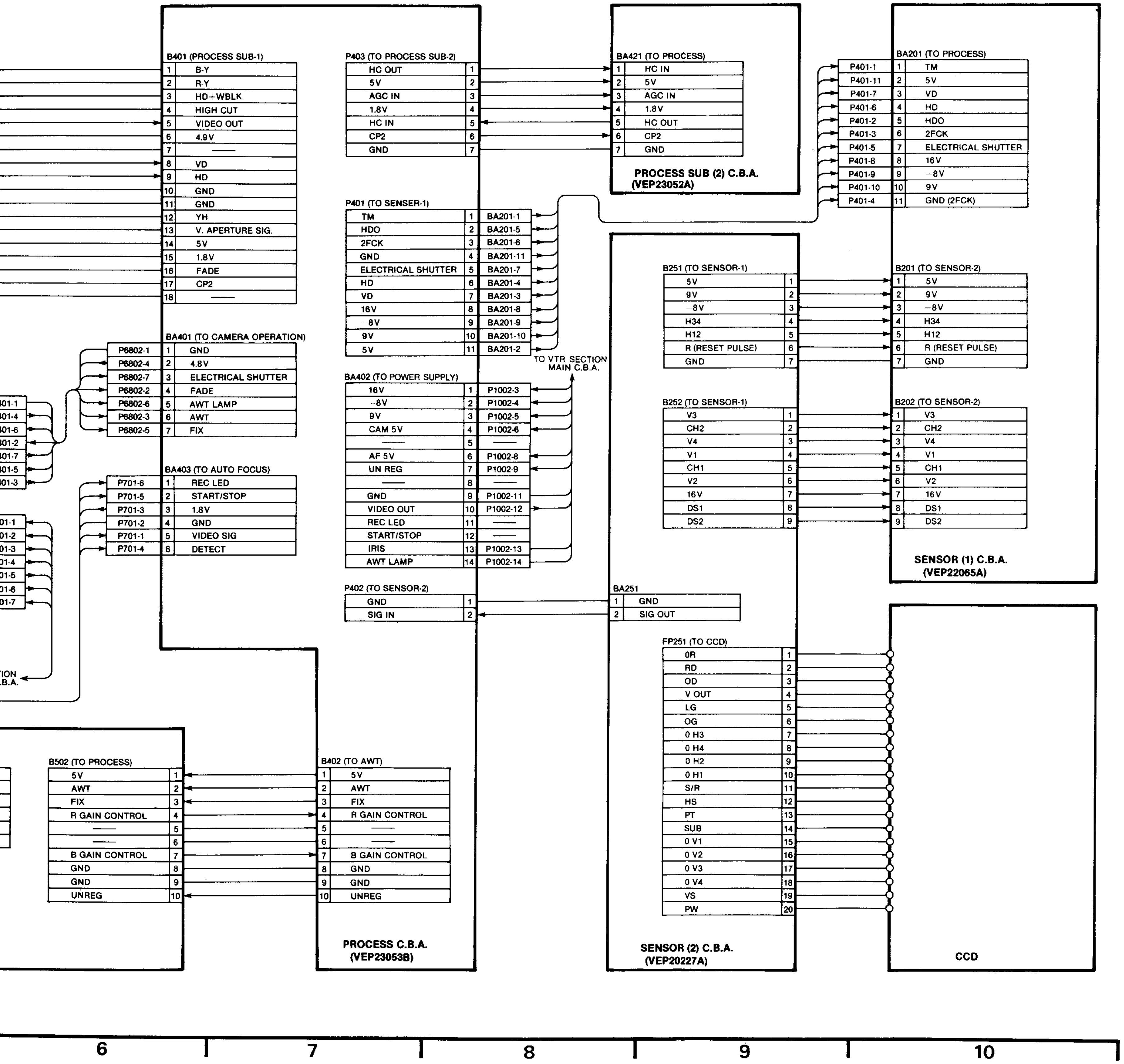
## 3-28. CAMERA INTERCONNECTION


E
D
C
B
A
IRIS MOTOR
M
PIEZO-ELECTRIC ELEMENT
ENCODER C.B.A. (VEP30020A)
ZOOM MOTOR
FOCUS MOTOR
P703 (TO IRIS MOTOR)
1 HOLE EL. IN ⊖
2 HOLE EL. OUT ⊖
3 HOLE EL. OUT ⊕
4 HOLE EL. IN ⊕
5 MAIN +
6 CONT
7 CONT (1.8V)
8 MAIN −
P704 (TO PIEZO)
1 PIEZO
2 PIEZO
3 GND
P601 (TO ENCODER)
1 FOCUS 0
2 LED CONT
3 5V
4 ZOOM 1
5 ZOOM 0
6 FOCUS 1
P602 (TO ZOOM MOTOR)
1 ZOOM MOTOR ⊕
2 ZOOM MOTOR ⊖
P603 (TO FOCUS MOTOR)
1 FOCUS MOTOR ⊕
2 FOCUS MOTOR ⊖
P701 (TO PROCESS)
BA403-5 1 VIDEO SIGNAL
BA403-4 2 GND
BA403-3 3 1.8V
BA403-6 4 DETECT
BA403-2 5 START/STOP
BA403-1 6 REC LED
B601 (TO PROCESS SUB-1)
BLK 1
CP2 2
SC1 3
SC2 4
LSW 5
GND 6
5V 7
—— 8
WHD 9
VP 10
BA601 (TO POWER SUPPLY)
GND 1 P1002-7
DISPLAY 2 P1002-10
TO VTR SECTION MAIN C.B.A.
BA602 (TO CAMERA OPERATION)
AF ONE SHOT 1
AF AUTO/MAIN 2
GND 3
BLC 4
B602 (TO AWT)
UNREG 1 B501-1
—— 2 B501-2
ZOOM MOTOR ⊖ 3 B501-3
ZOOM MOTOR ⊕ 4 B501-4
—— 5 B501-5
—— 6 B501-6
AUTO FOCUS C.B.A. (VEP28013A)
B302 (TO AUTO FOCUS)
1 BLK
2 CP2
3 SC1
4 SC2
5 LSW
6 GND
7 4.9V
8 ——
9 WHD
10 VP
B301 (TO PROCESS)
B-Y 1
R-Y 2
HD+WBLK 3
HIGH CUT 4
VIDEO OUT 5
4.9V 6
—— 7
VD 8
HD 9
GND 10
GND 11
YH 12
V. APERTURE SIG. 13
5V 14
1.8V 15
FADE 16
CP2 17
—— 18
PROCESS SUB (1) C.B.A. (VEP23054A)
P6801 (TO AUTO FOCUS)
1 AF ONE SHOT
2 AF AUTO/MAIN
3 GND
4 BLC
P6803 (TO ZOOM)
b 1 P20
a 2 P60
P6802 (TO PROCESS)
GND 1 BA401-1
FADE 2 BA401-4
AWT 3 BA401-6
4.8V 4 BA401-2
FIX 5 BA401-7
AWT LAMP 6 BA401-5
ELECTRICAL SHUTTER 7 BA401-3
P6804 (TO SYSTEM CTL)
P61 1 P6001-1
P60 2 P6001-2
P30 3 P6001-3
P23 4 P6001-4
P22 5 P6001-5
LED OUT 6 P6001-6
LED +B 7 P6001-7
(VTR SECTION) CAMERA OPERATION C.B.A. (VEP06381A)
TO VTR SECTION MAIN C.B.A.
B401 (PROCESS SUB-1)
1 B-Y
2 R-Y
3 HD+WBLK
4 HIGH CUT
5 VIDEO OUT
6 4.9V
7 ——
8 VD
9 HD
10 GND
11 GND
12 YH
13 V. APERTURE SIG.
14 5V
15 1.8V
16 FADE
17 CP2
18 ——
BA401 (TO CAMERA OPERATION)
P6802-1 1 GND
P6802-4 2 4.8V
P6802-7 3 ELECTRICAL SHUTTER
P6802-2 4 FADE
P6802-6 5 AWT LAMP
P6802-3 6 AWT
P6802-5 7 FIX
BA403 (TO AUTO FOCUS)
P701-6 1 REC LED
P701-5 2 START/STOP
P701-3 3 1.8V
P701-2 4 GND
P701-1 5 VIDEO SIG
P701-4 6 DETECT
P403 (TO PROCESS SUB-2)
HC OUT 1
5V 2
AGC IN 3
1.8V 4
HC IN 5
CP2 6
GND 7
P401 (TO SENSER-1)
TM 1 BA201-1
HDO 2 BA201-5
2FCK 3 BA201-6
GND 4 BA201-11
ELECTRICAL SHUTTER 5 BA201-7
HD 6 BA201-4
VD 7 BA201-3
16V 8 BA201-8
−8V 9 BA201-9
9V 10 BA201-10
5V 11 BA201-2
TO VTR SECTION MAIN C.B.A.
BA402 (TO POWER SUPPLY)
16V 1 P1002-3
−8V 2 P1002-4
9V 3 P1002-5
CAM 5V 4 P1002-6
—— 5 ——
AF 5V 6 P1002-8
UN REG 7 P1002-9
—— 8 ——
GND 9 P1002-11
VIDEO OUT 10 P1002-12
REC LED 11 ——
START/STOP 12 ——
IRIS 13 P1002-13
AWT LAMP 14 P1002-14
P402 (TO SENSOR-2)
GND 1
SIG IN 2
BA421 (TO PROCESS)
1 HC IN
2 5V
3 AGC IN
4 1.8V
5 HC OUT
6 CP2
7 GND
PROCESS SUB (2) C.B.A. (VEP23052A)
B251 (TO SENSOR-1)
5V
9V
−8V
H34
H12
R (RESET PULSE)
GND
B252 (TO SENSOR-1)
V3
CH2
V4
V1
CH1
V2
16V
DS1
DS2
BA251
1 GND
2 SIG OUT
FP251 (TO CCD)
0R
RD
OD
V OUT
LG
OG
0 H3
0 H4
0 H2
0 H1
S/R
HS
PT
SUB
0 V1
0 V2
0 V3
0 V4
VS
PW
SENSOR (2) C.B.A. (VEP20227A)
SW851
P8
P9
REC START C.B.A. (VEK3030)
(T)
(W)
P1 c
P2 d
P3 e
P5 a
P4 b
P7
P6
ZOOM C.B.A. (VEK3031)
AWT SENSOR
FP501 (TO AWT SENSOR)
1 4.8V
2 GND
3 LOW
4 SWL/SL
5 B
6 G
7 R
P501 (TO ZOOM)
e 1 WIDE
d 2 TELE
c 3 5V
B501 (TO AUTO FOCUS)
B602-1 1 UNREG
B602-2 2 ——
B602-3 3 ZOOM MOTOR ⊖
B602-4 4 ZOOM MOTOR ⊕
B602-5 5 ——
B602-6 6 ——
B502 (TO PROCESS)
5V 1
AWT 2
FIX 3
R GAIN CONTROL 4
—— 5
—— 6
B GAIN CONTROL 7
GND 8
GND 9
UNREG 10
AWT C.B.A. (VEP23050A)
B402 (TO AWT)
1 5V
2 AWT
3 FIX
4 R GAIN CONTROL
5 ——
6 ——
7 B GAIN CONTROL
8 GND
9 GND
10 UNREG
PROCESS C.B.A. (VEP23053B)

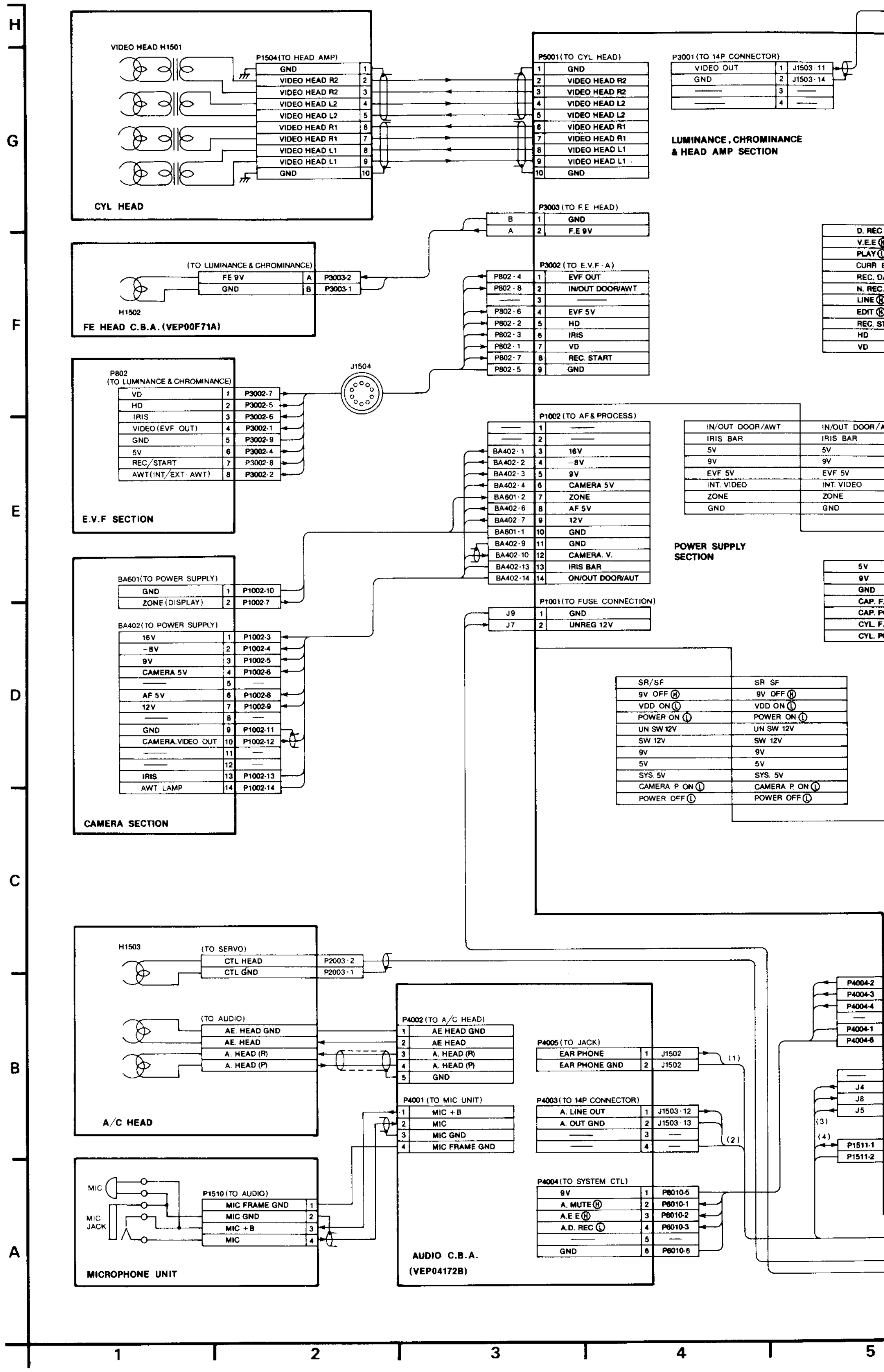
**IMPORTANT SAFETY NOTICE:**
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

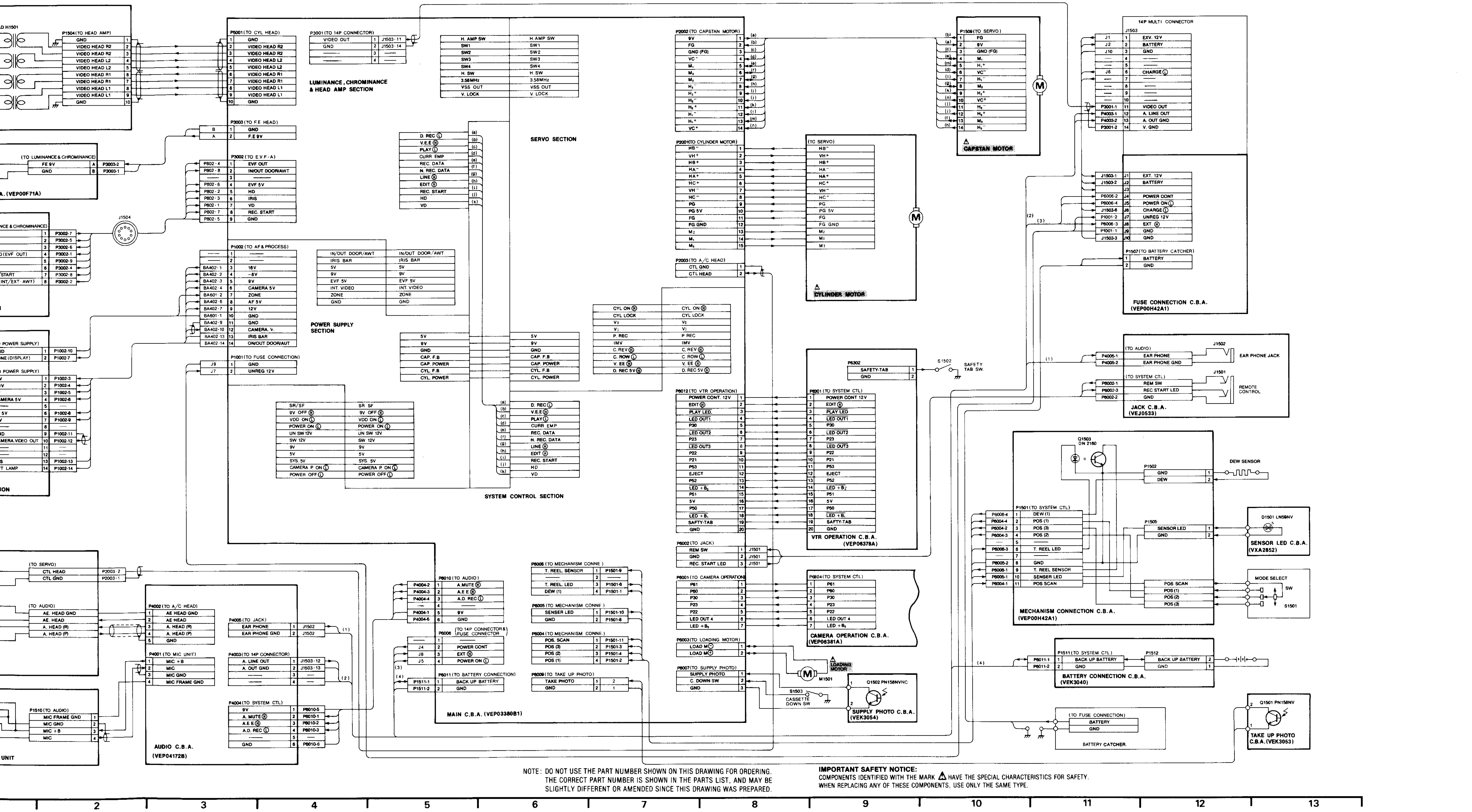
1 2 3 4 5 6 7 8 9


B401 (PROCESS SUB-1)
B-Y
R-Y
HD+WBLK
HIGH CUT
VIDEO OUT
4.9V
VD
HD
GND
GND
YH
V. APERTURE SIG.
5V
1.8V
FADE
CP2
BA401 (TO CAMERA OPERATION)
GND
4.8V
ELECTRICAL SHUTTER
FADE
AWT LAMP
AWT
FIX
P6802-1
P6802-4
P6802-7
P6802-2
P6802-6
P6802-3
P6802-5
BA403 (TO AUTO FOCUS)
REC LED
START/STOP
1.8V
GND
VIDEO SIG
DETECT
P701-6
P701-5
P701-3
P701-2
P701-1
P701-4
P403 (TO PROCESS SUB-2)
HC OUT
5V
AGC IN
1.8V
HC IN
CP2
GND
P401 (TO SENSER-1)
TM
HDO
2FCK
GND
ELECTRICAL SHUTTER
HD
VD
16V
−8V
9V
5V
BA201-1
BA201-5
BA201-6
BA201-11
BA201-7
BA201-4
BA201-3
BA201-8
BA201-9
BA201-10
BA201-2
TO VTR SECTION MAIN C.B.A.
BA402 (TO POWER SUPPLY)
16V
−8V
9V
CAM 5V
AF 5V
UN REG
GND
VIDEO OUT
REC LED
START/STOP
IRIS
AWT LAMP
P1002-3
P1002-4
P1002-5
P1002-6
P1002-8
P1002-9
P1002-11
P1002-12
P1002-13
P1002-14
P402 (TO SENSOR-2)
GND
SIG IN
BA421 (TO PROCESS)
HC IN
5V
AGC IN
1.8V
HC OUT
CP2
GND
PROCESS SUB (2) C.B.A. (VEP23052A)
BA201 (TO PROCESS)
P401-1
P401-11
P401-7
P401-6
P401-2
P401-3
P401-5
P401-8
P401-9
P401-10
P401-4
TM
5V
VD
HD
HDO
2FCK
ELECTRICAL SHUTTER
16V
−8V
9V
GND (2FCK)
B251 (TO SENSOR-1)
5V
9V
−8V
H34
H12
R (RESET PULSE)
GND
B201 (TO SENSOR-2)
5V
9V
−8V
H34
H12
R (RESET PULSE)
GND
B252 (TO SENSOR-1)
V3
CH2
V4
V1
CH1
V2
16V
DS1
DS2
B202 (TO SENSOR-2)
V3
CH2
V4
V1
CH1
V2
16V
DS1
DS2
SENSOR (1) C.B.A. (VEP22065A)
BA251
GND
SIG OUT
FP251 (TO CCD)
0R
RD
OD
V OUT
LG
OG
0 H3
0 H4
0 H2
0 H1
S/R
HS
PT
SUB
0 V1
0 V2
0 V3
0 V4
VS
PW
B502 (TO PROCESS)
5V
AWT
FIX
R GAIN CONTROL
B GAIN CONTROL
GND
GND
UNREG
B402 (TO AWT)
5V
AWT
FIX
R GAIN CONTROL
B GAIN CONTROL
GND
GND
UNREG
PROCESS C.B.A. (VEP23053B)
SENSOR (2) C.B.A. (VEP20227A)
CCD
6
7
8
9
10

# 3-29. VTR INTERCONNECTION


H
G
F
E
D
C
B
A
VIDEO HEAD H1501
P1504 (TO HEAD AMP)
GND
VIDEO HEAD R2
VIDEO HEAD R2
VIDEO HEAD L2
VIDEO HEAD L2
VIDEO HEAD R1
VIDEO HEAD R1
VIDEO HEAD L1
VIDEO HEAD L1
GND
CYL HEAD
P5001 (TO CYL HEAD)
P3001 (TO 14P CONNECTOR)
VIDEO OUT
GND
J1503-11
J1503-14
LUMINANCE, CHROMINANCE & HEAD AMP SECTION
P3003 (TO F.E HEAD)
GND
F.E 9V
(TO LUMINANCE & CHROMINANCE)
FE 9V
GND
P3003-2
P3003-1
H1502
FE HEAD C.B.A. (VEP00F71A)
P3002 (TO E.V.F-A)
EVF OUT
IN/OUT DOOR/AWT
EVF 5V
HD
IRIS
VD
REC START
GND
P802 (TO LUMINANCE & CHROMINANCE)
VD
HD
IRIS
VIDEO (EVF OUT)
GND
5V
REC/START
AWT (INT/EXT AWT)
J1504
E.V.F SECTION
P1002 (TO AF & PROCESS)
16V
−8V
9V
CAMERA 5V
ZONE
AF 5V
12V
GND
GND
CAMERA V.
IRIS BAR
ON/OUT DOOR/AWT
P1001 (TO FUSE CONNECTION)
GND
UNREG 12V
J9
J7
POWER SUPPLY SECTION
BA601 (TO POWER SUPPLY)
GND
ZONE (DISPLAY)
BA402 (TO POWER SUPPLY)
16V
−8V
9V
CAMERA 5V
AF 5V
12V
GND
CAMERA VIDEO OUT
IRIS
AWT LAMP
CAMERA SECTION
IN/OUT DOOR/AWT
IRIS BAR
5V
9V
EVF 5V
INT. VIDEO
ZONE
GND
SR/SF
9V OFF
VDD ON
POWER ON
UN SW 12V
SW 12V
9V
5V
SYS 5V
CAMERA P ON
POWER OFF
D. REC
V.E.E
PLAY
CURR
REC. D
N. REC
LINE
EDIT
REC. S
HD
VD
5V
9V
GND
CAP. F
CAP. P
CYL. F
CYL. P
H1503
(TO SERVO)
CTL HEAD
CTL GND
P2003-2
P2003-1
(TO AUDIO)
AE. HEAD GND
AE. HEAD
A. HEAD (R)
A. HEAD (P)
A/C HEAD
P4002 (TO A/C HEAD)
AE. HEAD GND
AE. HEAD
A. HEAD (R)
A. HEAD (P)
GND
P4005 (TO JACK)
EAR PHONE
EAR PHONE GND
J1502
J1502
P4001 (TO MIC UNIT)
MIC +B
MIC
MIC GND
MIC FRAME GND
P4003 (TO 14P CONNECTOR)
A. LINE OUT
A. OUT GND
J1503-12
J1503-13
P4004 (TO SYSTEM CTL)
9V
A. MUTE
A.E E
A.D. REC
GND
P6010-5
P6010-1
P6010-2
P6010-3
P6010-6
P4004-2
P4004-3
P4004-4
P4004-1
P4004-6
J4
J8
J5
P1511-1
P1511-2
(1)
(2)
(3)
(4)
MIC
MIC JACK
P1510 (TO AUDIO)
MIC FRAME GND
MIC GND
MIC +B
MIC
MICROPHONE UNIT
AUDIO C.B.A. (VEP04172B)
1
2
3
4
5

# NTERCONNECTION


LUMINANCE, CHROMINANCE & HEAD AMP SECTION
SERVO SECTION
POWER SUPPLY SECTION
SYSTEM CONTROL SECTION
MAIN C.B.A. (VEP03380B1)
AUDIO C.B.A. (VEP04172B)
CAPSTAN MOTOR
CYLINDER MOTOR
FUSE CONNECTION C.B.A. (VEP00H42A1)
JACK C.B.A. (VEJ0533)
VTR OPERATION C.B.A. (VEP06378A)
CAMERA OPERATION C.B.A. (VEP06381A)
MECHANISM CONNECTION C.B.A. (VEP00H42A1)
SENSOR LED C.B.A. (VXA2852)
BATTERY CONNECTION C.B.A. (VEK3040)
SUPPLY PHOTO C.B.A. (VEK3054)
TAKE UP PHOTO C.B.A. (VEK3053)
BATTERY CATCHER
LOADING MOTOR
M1501
14P MULTI CONNECTOR
EAR PHONE JACK
REMOTE CONTROL
DEW SENSOR
MODE SELECT
SAFETY TAB SW.
CASSETTE DOWN SW
Q1501 PN158NV
Q1502 PN158NVNC
Q1503 DN 2160
D1501 LN58NV
J1504
2
3
4
5
6
7
8
9
10
11
12
13

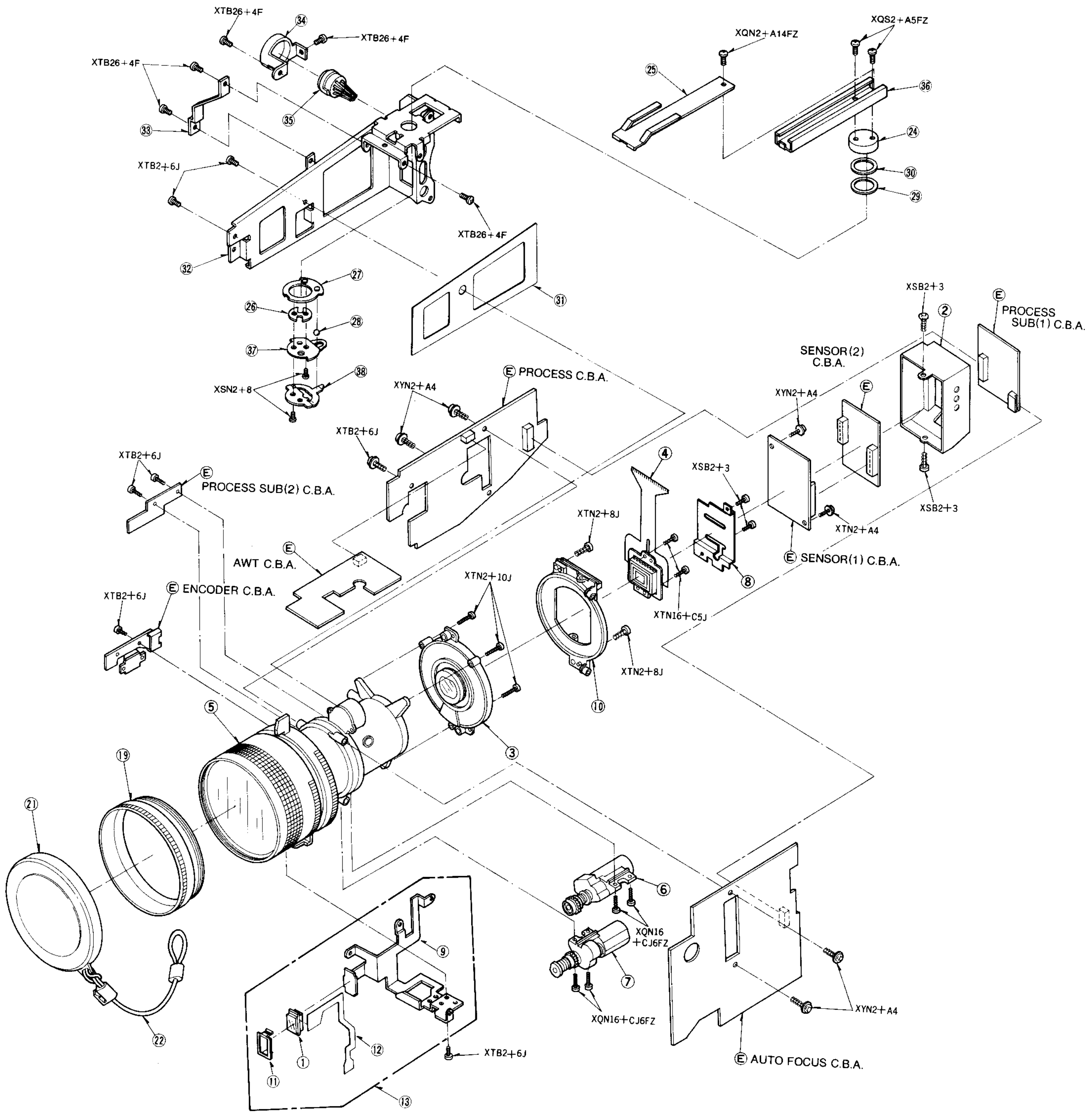
NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

**IMPORTANT SAFETY NOTICE:**
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

Next Page:
EXPLODED VIEWS

# SECTION 4
# EXPLODED VIEWS & PARTS LIST

## 4-1. EXPLODED VIEWS ❶ CAMERA LENS SECTION

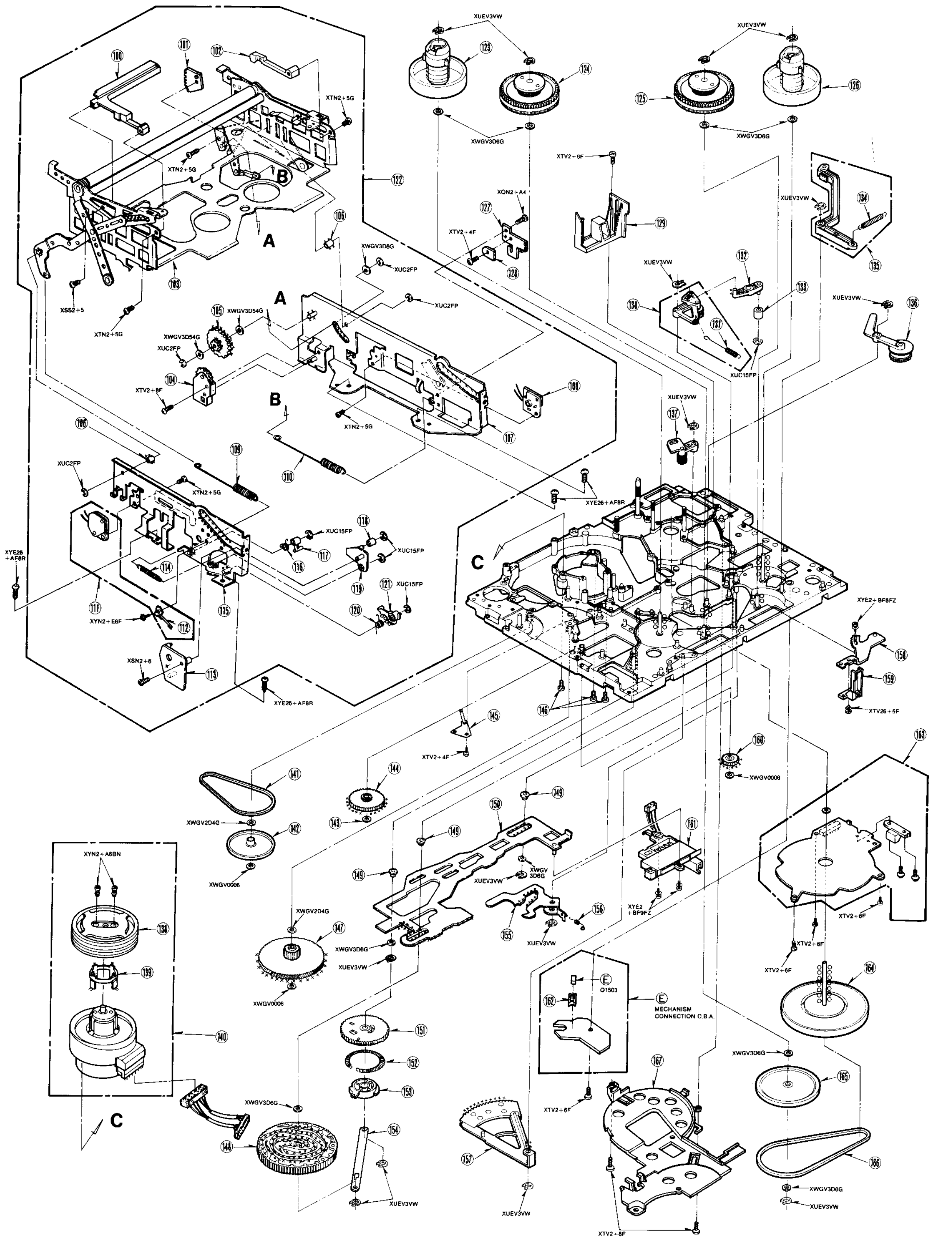

XTB26+4F
34
XTB26+4F
XTB26+4F
33
35
XTB2+6J
32
XTB26+4F
25
XQN2+A14FZ
XQS2+A5FZ
36
24
30
29
31
27
26
28
37
38
XSN2+8
XYN2+A4
Ⓔ PROCESS C.B.A.
XTB2+6J
XTB2+6J
Ⓔ PROCESS SUB(2) C.B.A.
Ⓔ AWT C.B.A.
XTB2+6J
Ⓔ ENCODER C.B.A.
4
XSB2+3
XTN2+8J
XTN2+10J
XTN16+C5J
8
SENSOR(2) C.B.A.
Ⓔ
XYN2+A4
XSB2+3
2
Ⓔ PROCESS SUB(1) C.B.A.
XTN2+A4
XSB2+3
Ⓔ SENSOR(1) C.B.A.
10
XTN2+8J
5
3
19
21
22
6
XQN16+CJ6FZ
7
XQN16+CJ6FZ
9
12
1
11
XTB2+6J
13
XYN2+A4
Ⓔ AUTO FOCUS C.B.A.

## ❷ VTR MECHANISM SECTION (1)

LUBRICATION POINTS

When the marked parts are replaced, apply the recommended lubricants or adhesive for better maintenance of the unit.

| Marks | Kind of Lubricant | Availability | Part Number |
|---|---|---|---|
| ××× | Molytone Grease | Available From Factor | MOR265 |
| ○○○ | Spindle Oil | Purchase From Local Supplier | ...... |
| △△△ | Gummed Adhesive | Purchase From Local Supplier | ...... |

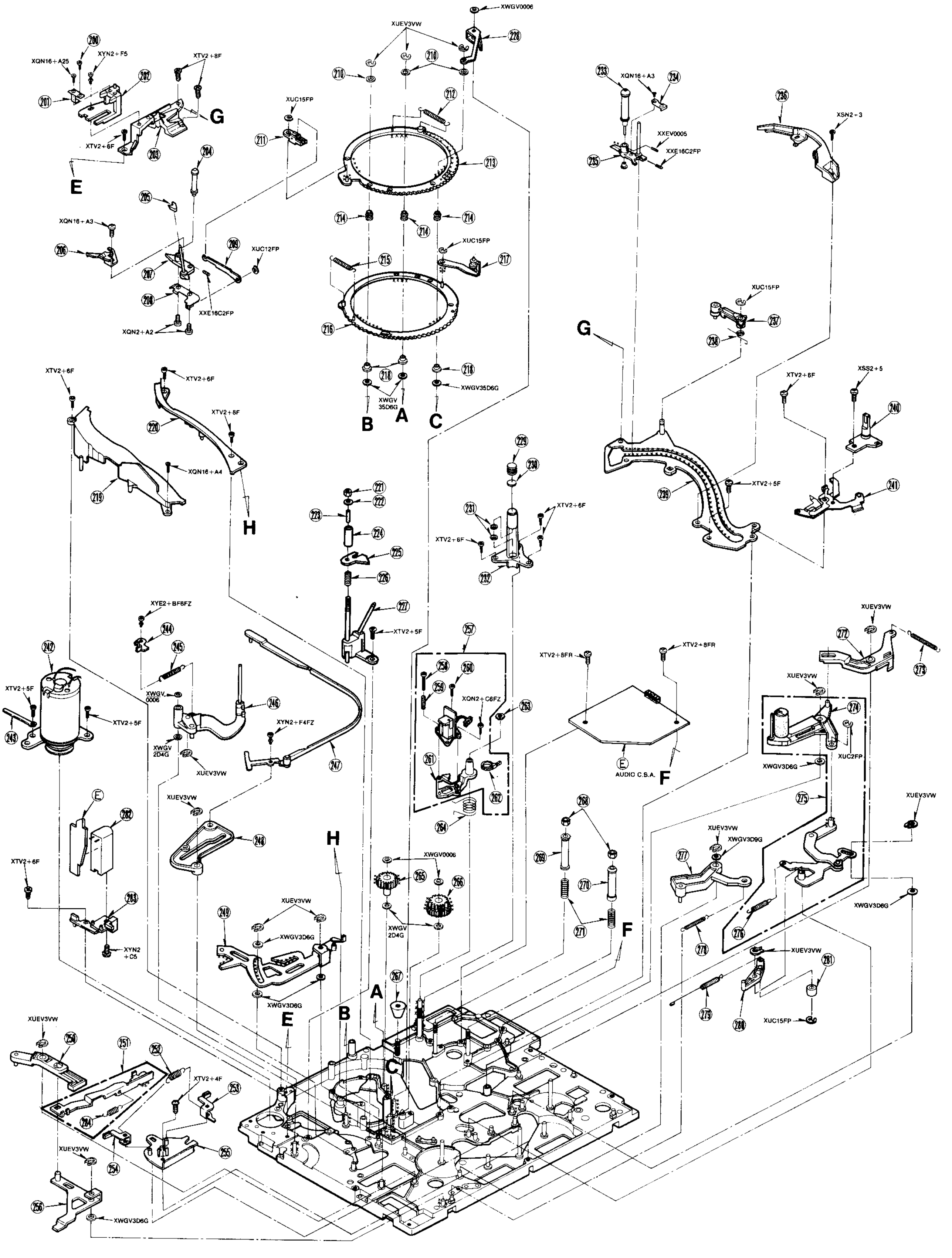

100
101
102
XTN2+5G
XTN2+5G
B
A
103
XSS2+5
XTN2+5G
106
122
XUEV3VW
123
124
XWGV3D6G
XTV2+6F
XQN2+A4
127
XTV2+4F
128
XWGV3D8G
XUC2FP
XUC2FP
A
105
XWGV3D54G
XWGV3D54G
XUC2FP
104
XTV2+8F
B
XTN2+5G
107
108
106
XUC2FP
109
XTN2+5G
110
XYE26+AF8R
111
114
XYN2+E6F
112
115
113
XSN2+6
XYE26+AF8R
XUC15FP
117
116
118
XUC15FP
119
121
XUC15FP
120
XYE26+AF8R
C
125
126
XUEV3VW
129
XUEV3VW
134
135
XUEV3VW
132
130
131
133
XUC15FP
XUEV3VW
136
XUEV3VW
137
XYE2+BF6FZ
158
159
XTV26+5F
146
145
XTV2+4F
160
XWGV0006
163
141
144
143
XWGV2D4G
142
XWGV0006
149
150
149
149
XWGV 3D6G
XUEV3VW
161
XYE2 +BF9FZ
156
155
XUEV3VW
XTV2+6F
XTV2+6F
XTV2+6F
XYN2+A6BN
138
139
140
C
XWGV2D4G
147
XWGV3D6G
XUEV3VW
XWGV0006
151
152
153
XWGV3D6G
148
154
XUEV3VW
Ⓔ Q1503
162
Ⓔ MECHANISM CONNECTION C.B.A.
XTV2+6F
157
XUEV3VW
167
XTV2+8F
164
XWGV3D6G
165
166
XWGV3D6G
XUEV3VW

LUBRICATION POINTS

When the marked parts are replaced, apply the recommended lubricants or adhesive for better maintenance of the unit.

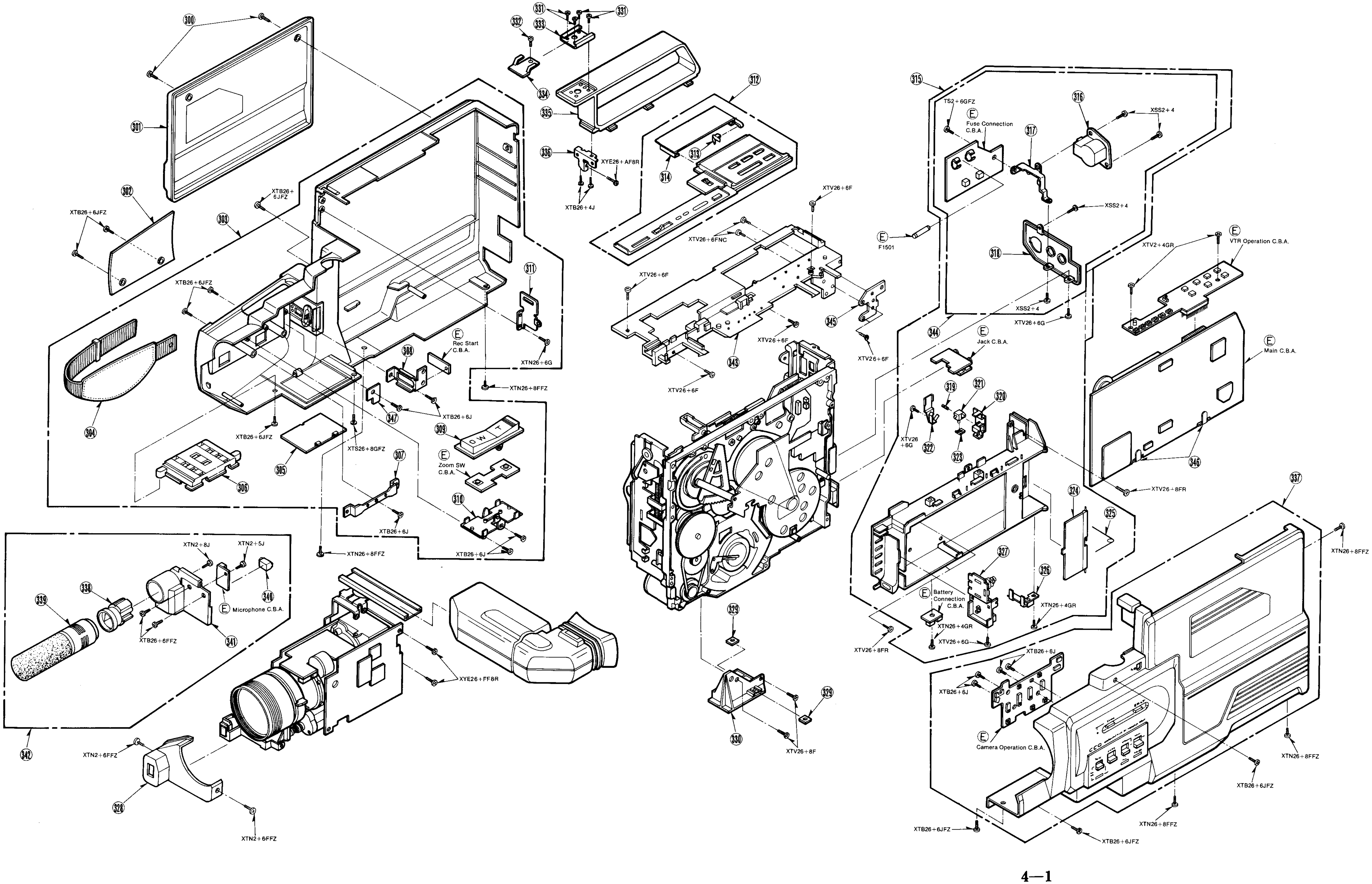
| Marks | Kind of Lubricant | Availability | Part Number |
|---|---|---|---|
| X X X | Molytone Grease | Available From Factor | MOR265 |
| OOO | Spindle Oil | Purchase From Local Supplier | ...... |
| ΔΔΔ | Gummed Adhesive | Purchase From Local Supplier | ...... |

# ❸ VTR MECHANISM SECTION (2)



200
XQN16+A25
XYN2+F5
XTV2+8F
201
202
G
XTV2+6F
203
E
204
205
XQN16+A3
206
207
208
209
XUC12FP
XXE16C2FP
XQN2+A2
XUC15FP
211
XUEV3VW
XWGV0006
228
210
210
212
213
214
214
214
XUC15FP
215
217
216
218
218
XWGV 35D6G
XWGV35D6G
B
A
C
233
XQN16+A3
234
XXEV0005
XXE16C2FP
235
236
XSN2+3
XUC15FP
237
238
G
XTV2+6F
XSS2+5
240
239
XTV2+5F
241
XTV2+6F
XTV2+6F
220
XTV2+8F
XQN16+A4
219
H
221
222
223
224
225
226
227
XTV2+5F
229
230
231
XTV2+6F
XTV2+6F
232
XYE2+BF6FZ
244
245
242
XTV2+5F
XTV2+5F
243
XWGV 0006
246
XWGV 2D4G
XUEV3VW
XYN2+F4FZ
247
257
258
260
259
XQN2+C6FZ
263
261
262
264
XTV2+8FR
XTV2+8FR
E
AUDIO C.B.A.
F
XUEV3VW
272
273
XUEV3VW
274
XUC2FP
XWGV3D6G
275
XUEV3VW
E
282
XTV2+6F
283
XYN2 +C5
XUEV3VW
248
H
XWGV0006
265
266
XWGV 2D4G
268
269
270
271
F
XUEV3VW
XWGV3D9G
277
276
278
XWGV3D6G
XUEV3VW
249
XWGV3D6G
XWGV3D6G
E
B
A
267
C
XUEV3VW
281
279
280
XUC15FP
XUEV3VW
250
251
252
XTV2+4F
253
284
255
XUEV3VW
254
256
XWGV3D6G

## ❹ CHASSIS & FRAME SECTION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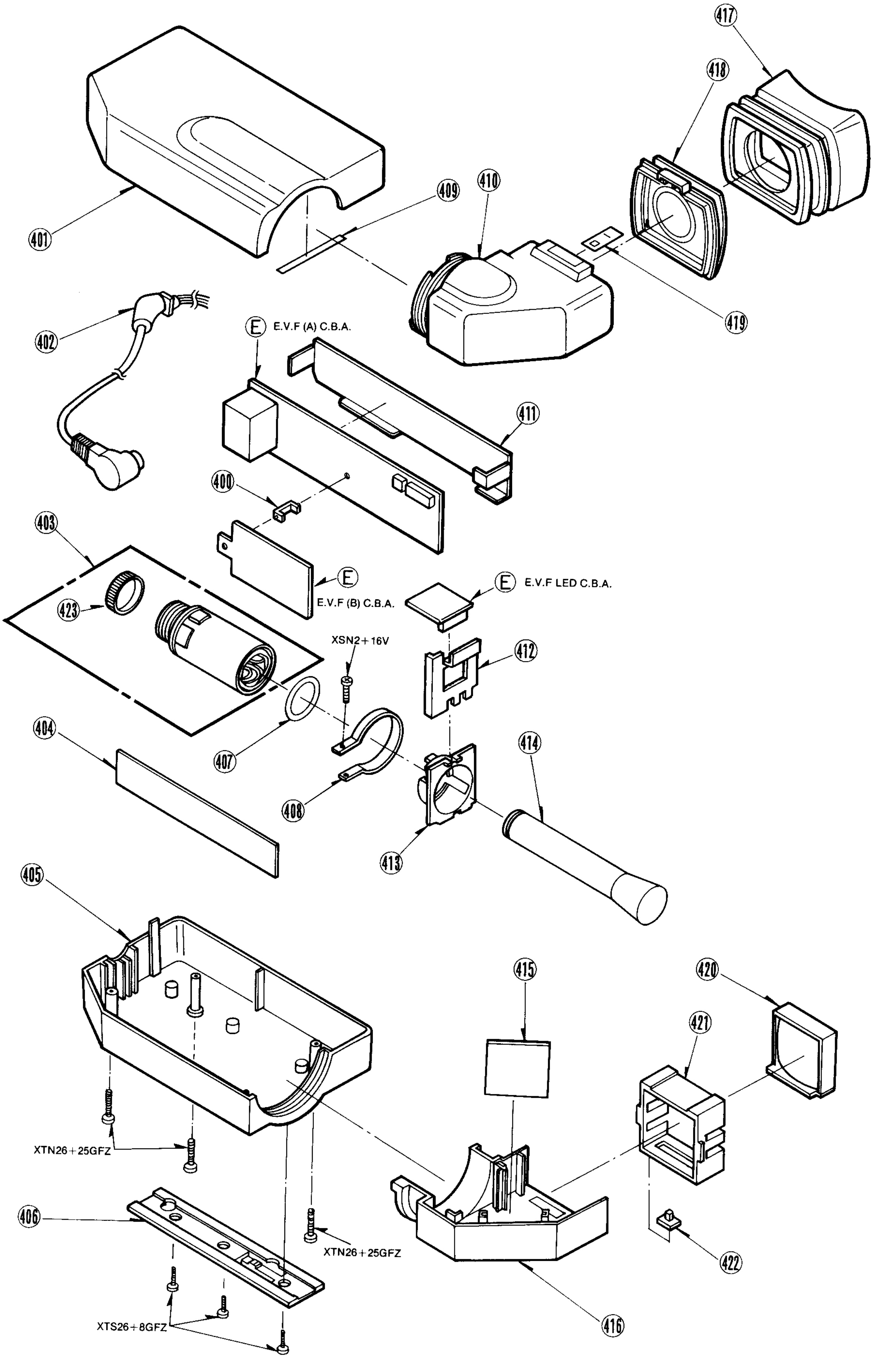
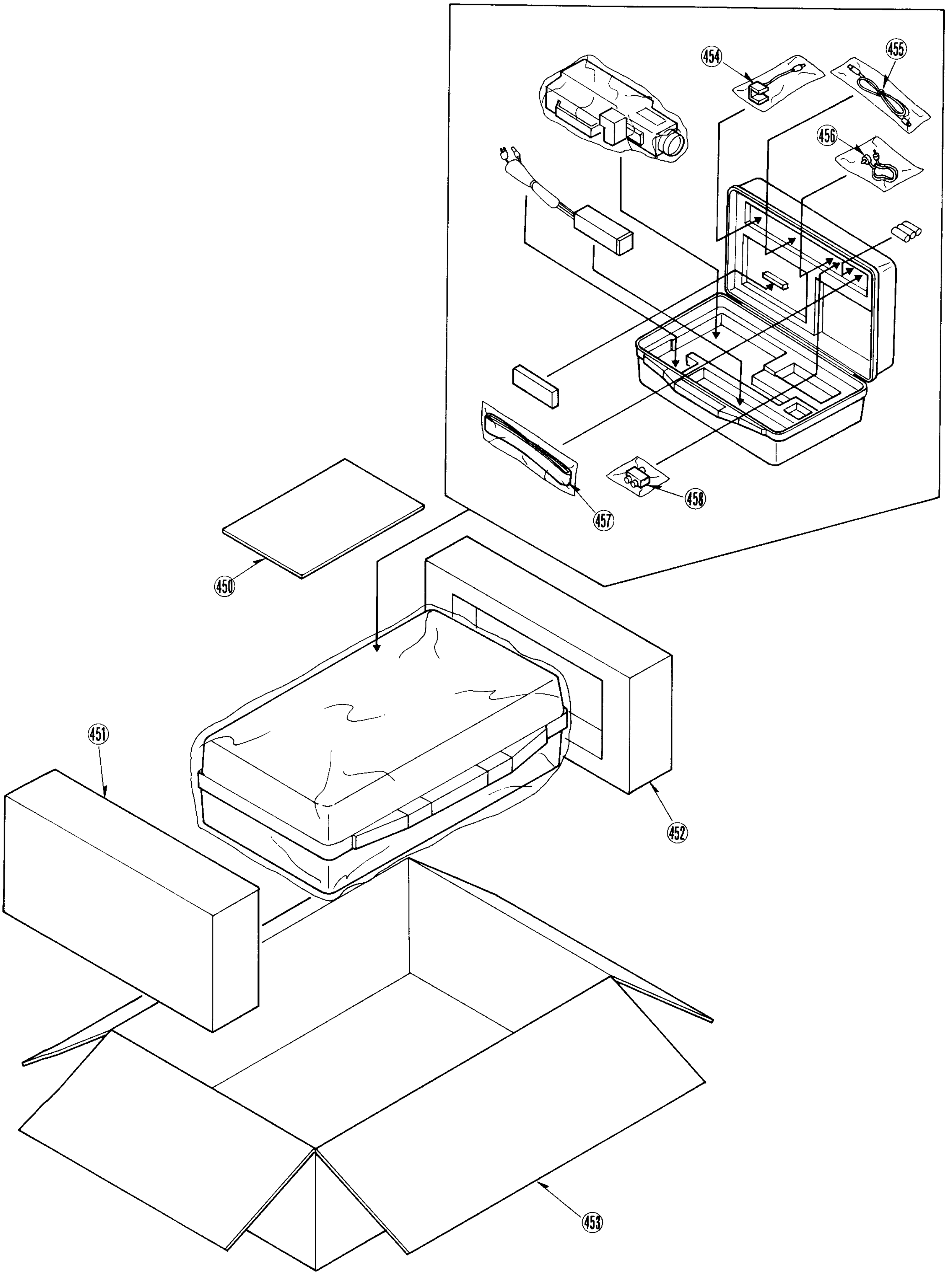
340
341
342
343
344
345
346
347
XTB26+6JFZ
XTB26+6JFZ
XTB26+6JFZ
XTB26+6J
XTB26+6J
XTB26+6J
XTS26+8GFZ
E
Rec Start C.B.A.
Zoom SW C.B.A.
XTN26+8FFZ
XTN26+6G
XYE26+AF8R
XTB26+4J
XTV26+6F
XTV26+6FNC
F1501
TS2+6GFZ
Fuse Connection C.B.A.
XSS2+4
XTV2+4GR
VTR Operation C.B.A.
Main C.B.A.
Jack C.B.A.
XTV26+6G
XTV26+8FR
XTN26+4GR
Battery Connection C.B.A.
Camera Operation C.B.A.
XTN2+8J
XTN2+5J
Microphone C.B.A.
XTB26+6FFZ
XYE26+FF8R
XTN2+6FFZ
XTV26+8F
W
T

# ⑤ E.V.F SECTION



417
418
410
409
401
419
402
E E.V.F (A) C.B.A.
411
400
403
E E.V.F (B) C.B.A.
E E.V.F LED C.B.A.
423
XSN2+16V
412
404
407
414
408
413
405
415
420
421
XTN26+25GFZ
406
XTN26+25GFZ
422
XTS26+8GFZ
416

## ❻ PACKING PARTS & ACCESSORIES SECTION (NV-M5B)


(454)
(455)
(456)
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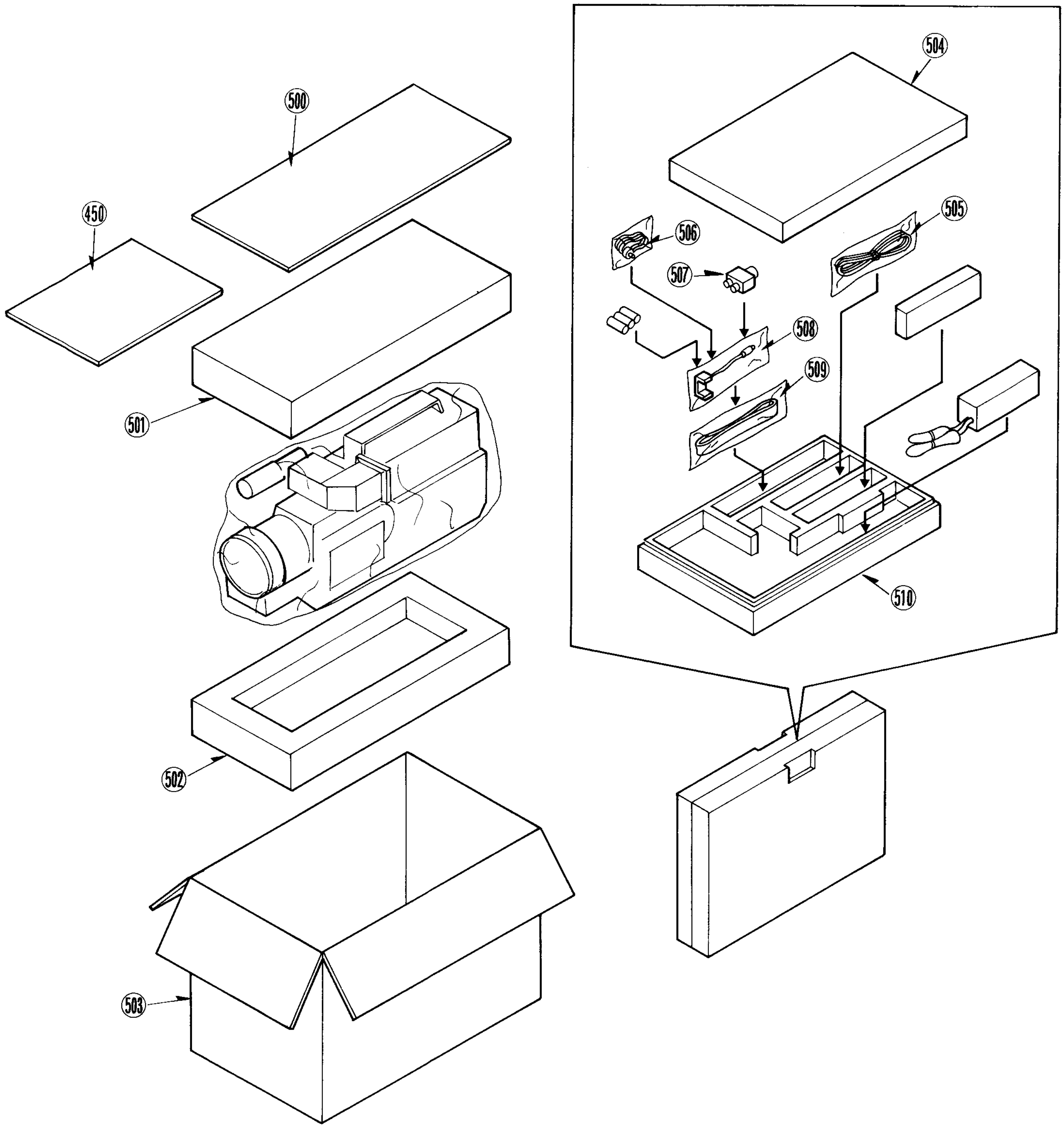
(458)
(450)
(451)
(452)
(453)

## ❼ PACKING PARTS & ACCESSORIES SECTION (NV-M5E/EG)


500
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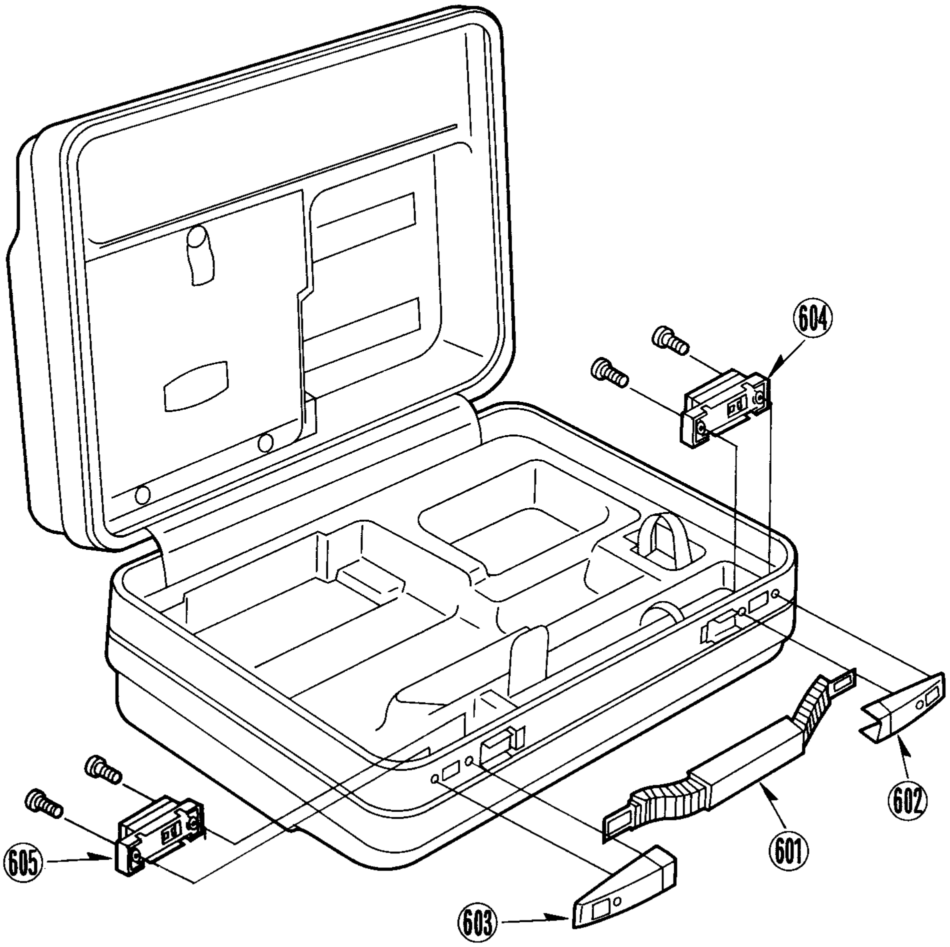
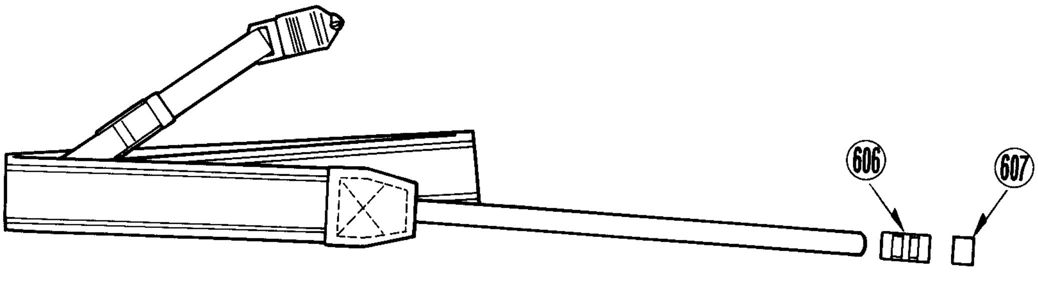
502
503
504
505
506
507
508
509
510

## ❽ SYSTEM CASE

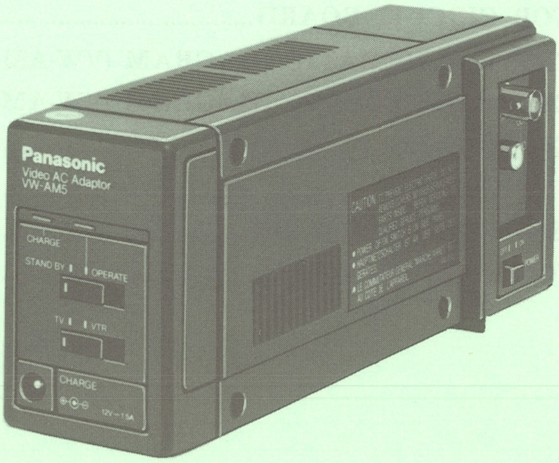

604
605
601
602
603

## ❾ SHOLDER STRAP



## AC Adaptor

# VW-AM5 E EG B



| ITEM | SPECIFICATION |
|---|---|
| POWER | SOURCE: 100∼240 V AC 50/60 Hz (Automatic Voltage Adjustment) |
| | CONSUMPTION: 44 watts |
| | OUTPUT: DC 12 V, 1.2 A for VHS Movie<br>DC 20 V, 0.1 A for Heater<br>DC 12 V, 1.5 A for battery charge |
| VIDEO | OUTPUT: VIDEO OUT CONNECTOR (BNC) 1.0 Vp-p, 75Ω terminated |

| ITEM | SPECIFICATION |
|---|---|
| AUDIO | OUTPUT: AUDIO OUT CONNECTOR (Phone Type) −8 dB, less than 2 kΩ |
| RF OUT SYSTEM | UHF: CH36 ± 4, $70^{+2}_{-3}$dBμ, 75Ω unbalanced PAL G (VW-AM5E, EG)<br>UHF: CH36 ± 4, 73 ± 3 dBμ, 75Ω unbalanced PAL G (VW-AM5B) |
| DIMENSIONS | 63(W) × 84(H) × 220(D) mm |
| WEIGHT | 0.93 kg |

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

**CAUTION: FOR USE WITH VHS VIDEO MOVIE, MODEL NV-M5.**
**WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.**

# CONTENTS

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2. DISASSEMBLY METHOD .......... 1
3. ELECTRICAL ADJUSTMENT PROCEDURES .......... 2
4. AC ADAPTOR BLOCK DIAGRAM .......... 3
5. AC ADAPTOR SCHEMATIC DIAGRAM .......... 4
6. AC ADAPTOR CIRCUIT BOARD .......... 4
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8. RF CONVERTER SCHEMATIC DIAGRAM (VW-AM5B) .......... 5
9. RF CONVERTER CIRCUIT BOARD .......... 5
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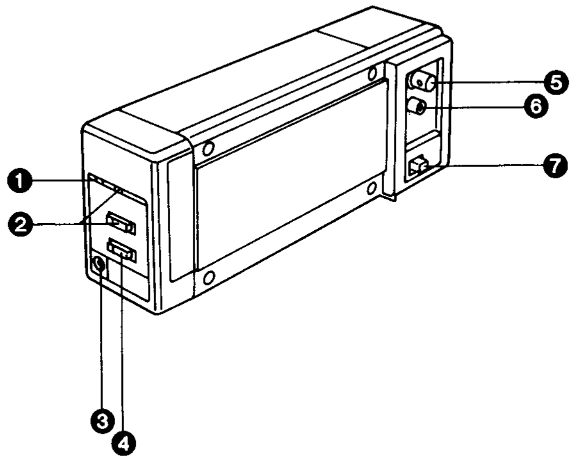
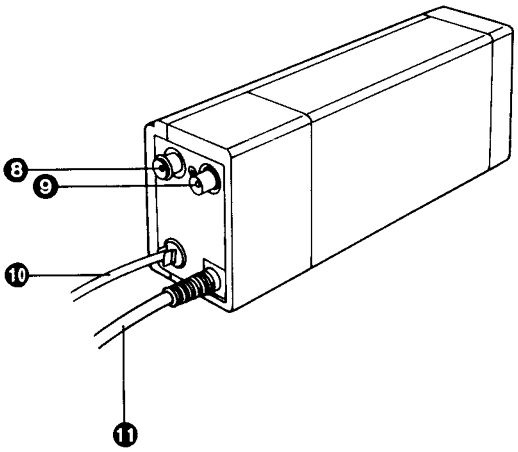
    1. CHASSIS & FRAME SECTION .......... 6
    2. PACKING PARTS SECTION .......... 6

# 1. CONTROLS AND COMPONENTS

## FRONT SIDE



## REAR SIDE



① Charging Indicator

② Operation Switch with Indicator

③ Battery Pack Charging Socket

④ TV/VTR Selector

⑤ Video Output Socket

⑥ Audio Output Socket

⑦ Power On/Off Switch

⑧ RF Input Socket

⑨ RF Output Socket

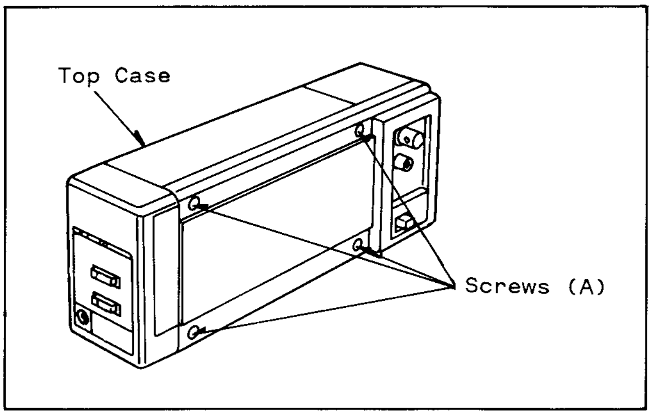
⑩ Mains Lead

⑪ Adaptor Cable

# 2. DISASSEMBLY PROCEDURES

1.Removal of Top Case

Unscrew the 4 screws (A) and remove the Top Case.

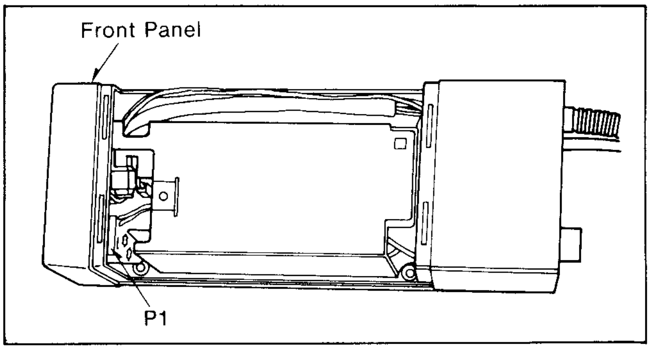


Top Case
Screws (A)

Fig.1

2.Removal of Front Panel

Remove the Front Panel disconnecting the connector P1.

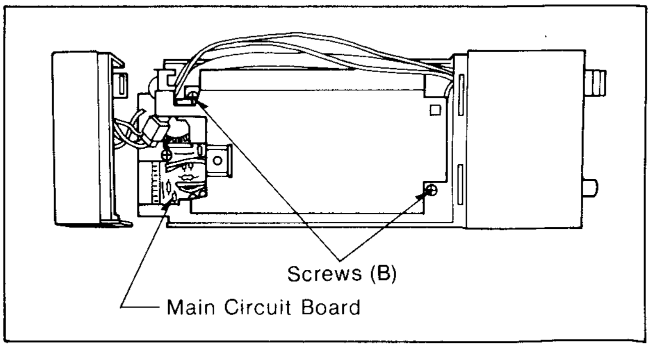


Front Panel
P1

Fig.2

3.Removal of Main Circuit Board

Unscrew the 2 screws (B) and remove the Main Circuit Board.



Screws (B)
Main Circuit Board

Fig.3

4.Removal of Rear Case

Unscrew the 3 screws (C) and screw (D) and remove the Rear Case.

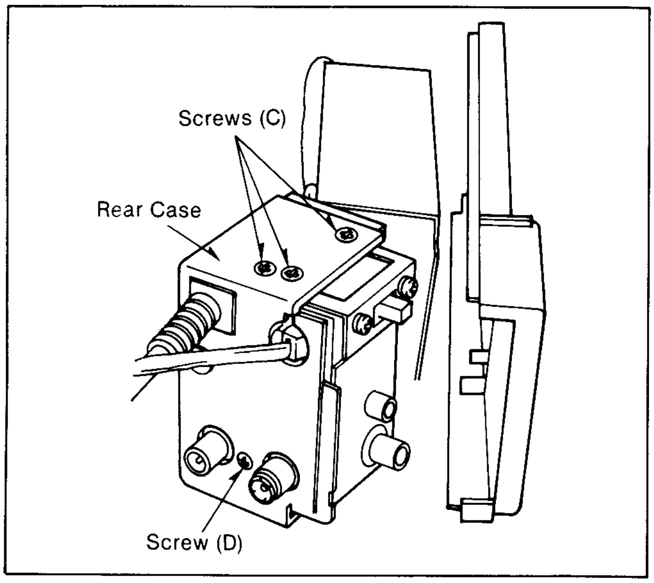

Screws (C)
Rear Case
Screw (D)

Fig.4

5.Removal of Main Sield Case

Diconnect the connector P6 and connector (E) and remove the Main Shield Case.

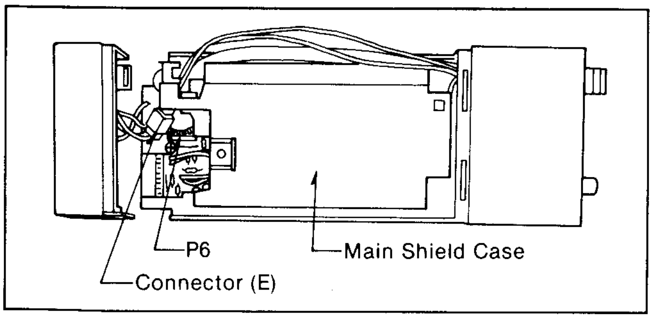

P6
Main Shield Case
Connector (E)

Fig.5

6.Removal of Front Panel Circuit Board

Unscrew the 2 screws (F) and remove the Front Panel Circuit Board.

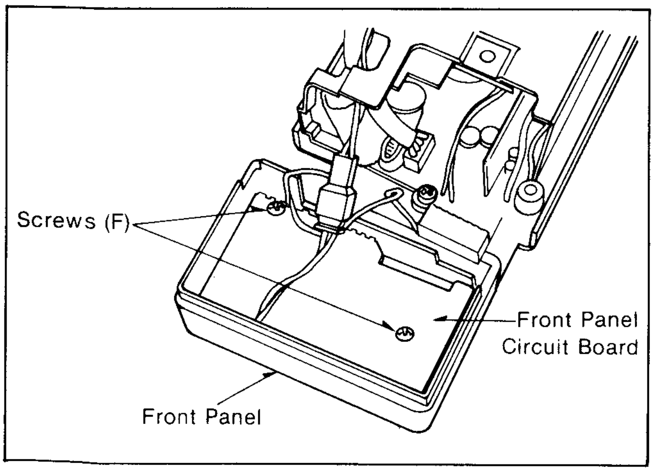

Screws (F)
Front Panel Circuit Board
Front Panel

Fig.6

7.Removal of A-V Terminal Circuit Board and Antenna Circuit Board

Remove shield case and unscrew the 2 screws (G) and a screw (H) and remove the A-V Terminal Circuit Board.
Remove the shield case (I) and remove the Antenna Circuit Board.

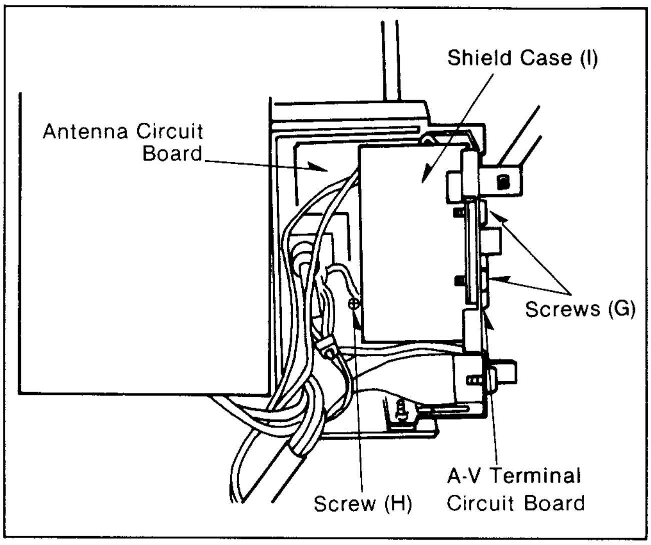

Shield Case (I)
Antenna Circuit Board
Screws (G)
A-V Terminal Circuit Board
Screw (H)

Fig.7

# 3. ELECTRICAL ADJUSTMENT PROCEDURES

This section provides complete electrical adjustment procedures which may be required for electronic circuit of the AC Adaptor VW-AM5.

## 3-1. TEST EQUIPMENTS

To perform the electrical adjustments completely following equipments are required.

1.D.V.M. (Digital Volt Meter)
Voltage Range :0.001~50V

2.Oscilloscope
Voltage Range :0.005~50V/div

3.DC Ammeter
Current Range :0~10A

4.DC Voltmeter
Voltage Range :0~20V

5.Plastic Tip Driver

6.Resistor (5ohm Variable 200W)

7.DC Power Supply (5A/20V)

### 3-2. POWER SUPPLY OUTPUT VOLTAGE ADJUSTMENT

| TP | ADJ. | MODE | INPUT |
|---|---|---|---|
| CONNECTOR P6-(1) (+)<br>-(3) (−) | VR1 | POWER SUPPLY | |
| **TAPE** | **M. EQ.** | **SPEC.** | |
| | D.V.M. | 12.8+-0.3V | |

1.Connect the unit (NV-M5) to AC Adaptor.
2.Turn the unit in REC-PLAY mode.
3.Adjust VR1 so that the output voltage at pin 1 of connector P6 is within specification.

### 3-3. INITIAL CHARGE CURRENT AND SCHMITT VOLTAGE ADJUSTMENT

| TP | ADJ. | MODE | INPUT |
|---|---|---|---|
| BATTERY HOLDER-(+)<br>-(−) | VR2<br>VR3 | CHARGE | |
| **TAPE** | **M. EQ.** | **SPEC.** | |
| | DC AM/D.V.M | A = 1.5±0.05[A] VR2<br>V = 15.8+ − 0.1[V] VR3 | |

1.Make the connection as shown below.

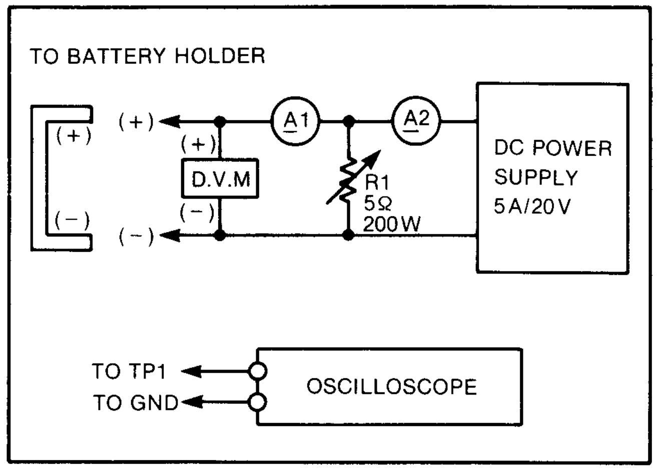
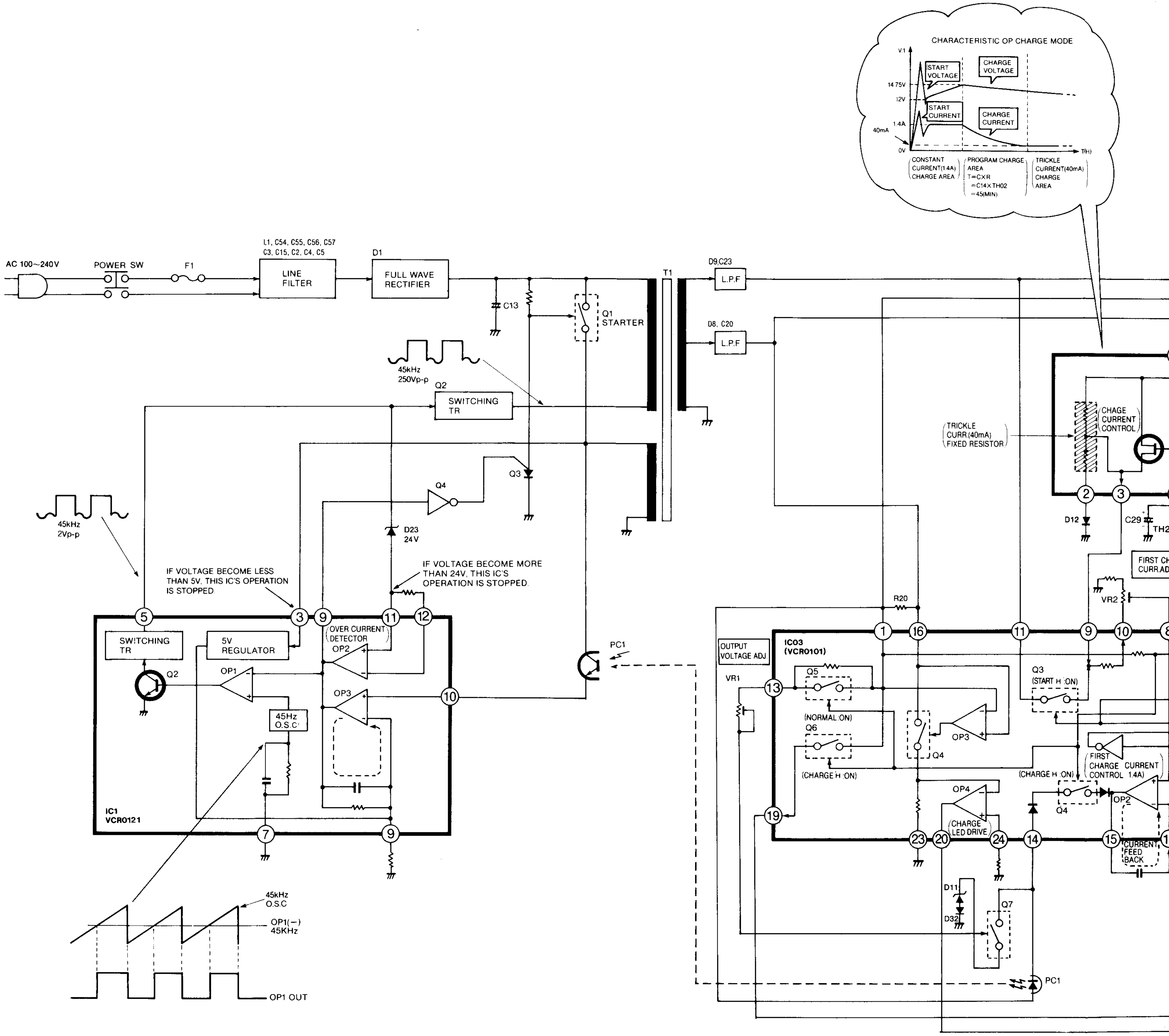

TO BATTERY HOLDER
(+)
(−)
(+)
(−)
D.V.M
A1
A2
R1
5Ω
200W
DC POWER SUPPLY 5A/20V
TO TP1
TO GND
OSCILLOSCOPE

Fig.8

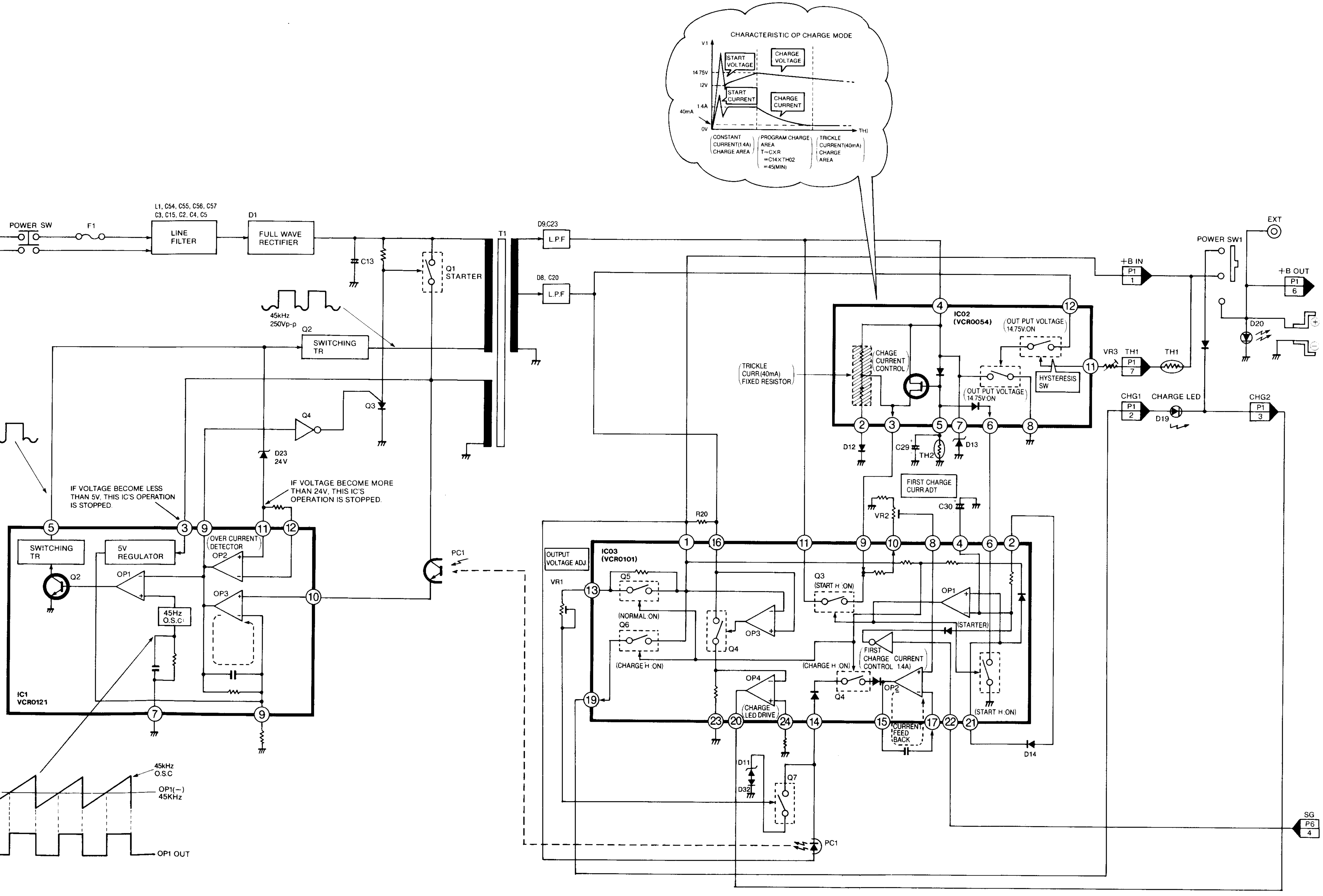
2.Adjust the output of the DC power supply so that the indication of the DC voltmeter becomes 14.0V and adjust R1 so that the indication of the DC ammeter (A2) becomes 3.0A.
3.Adjust VR2 so that the indication of the DC ammeter (A1) becomes 1.5+-0.05A.
4.Adjust the output level of the DC power supply untill the indication of the oscilloscope becomes low (about 0.5V) from high (about 15.0V).
5.If the value which was read in Item 4 is not 15.8 +- 0.1V, turn VR3 clockwise or counter clockwise.

It is also available to use a resistor 5ohm/50W or 2pieces of 10ohm/20W resistors inparallel use or equevalent, instead of variable resistor, 5ohm/200W to get specified current.

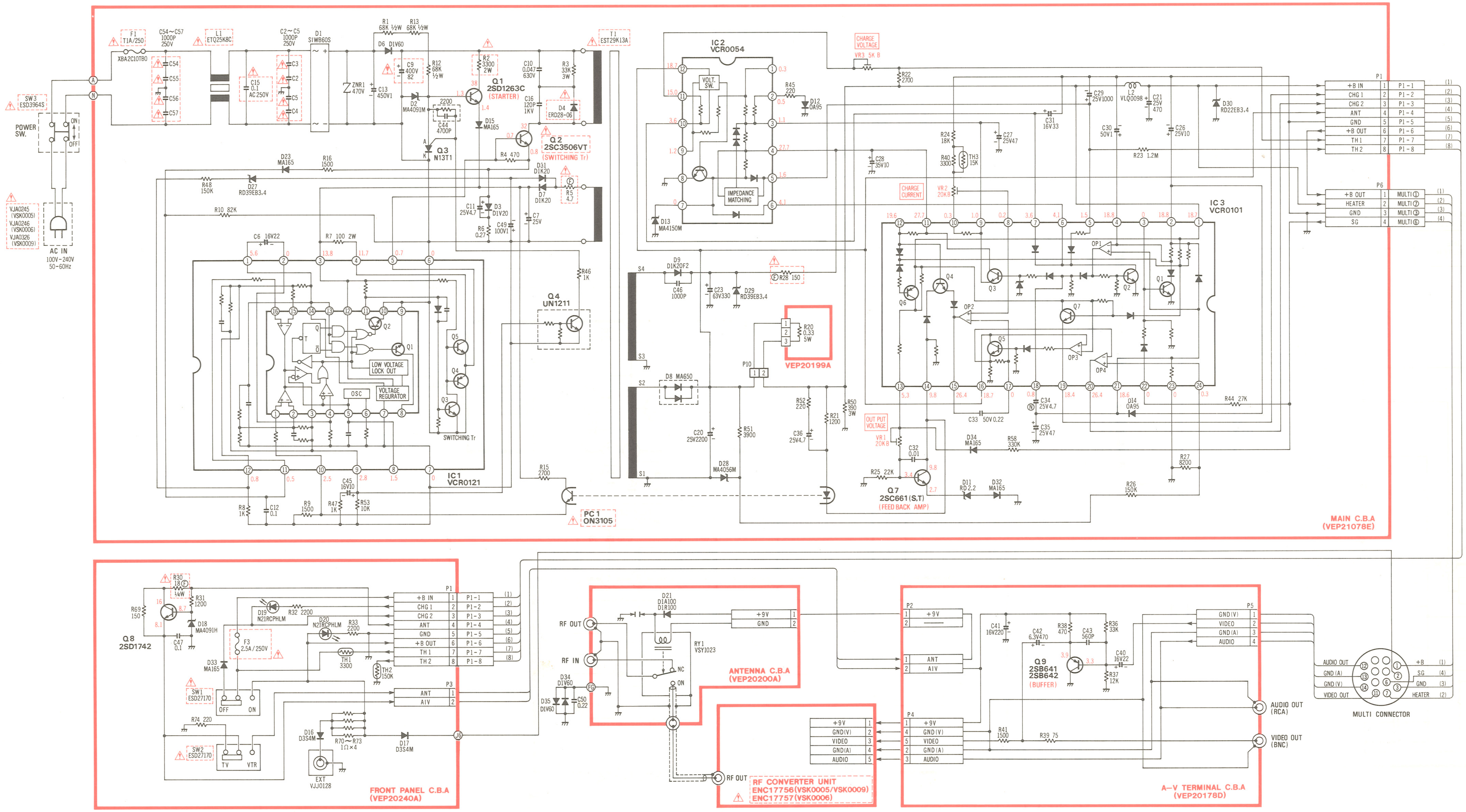
## 4. AC ADAPTOR BLOCK DIAGRAM


CHARACTERISTIC OP CHARGE MODE
V.1
14.75V
12V
1.4A
40mA
0V
START VOLTAGE
CHARGE VOLTAGE
START CURRENT
CHARGE CURRENT
T(H)
CONSTANT CURRENT(1.4A) CHARGE AREA
PROGRAM CHARGE AREA T=CXR =C14×TH02 =45(MIN)
TRICKLE CURRENT(40mA) CHARGE AREA
AC 100~240V
POWER SW
F1
L1, C54, C55, C56, C57
C3, C15, C2, C4, C5
LINE FILTER
D1
FULL WAVE RECTIFIER
C13
Q1 STARTER
T1
D9,C23
L.P.F
D8, C20
L.P.F
45kHz 250Vp-p
Q2
SWITCHING TR
Q3
Q4
D23 24V
45kHz 2Vp-p
IF VOLTAGE BECOME LESS THAN 5V, THIS IC'S OPERATION IS STOPPED
IF VOLTAGE BECOME MORE THAN 24V, THIS IC'S OPERATION IS STOPPED.
SWITCHING TR
Q2
5V REGULATOR
OP1
OVER CURRENT DETECTOR
OP2
OP3
45Hz O.S.C
IC1 VCR0121
PC1
45kHz O.S.C
OP1(−) 45KHz
OP1 OUT
TRICKLE CURR(40mA) FIXED RESISTOR
CHAGE CURRENT CONTROL
D12
C29
TH2
FIRST CH CURR.AD
VR2
R20
OUTPUT VOLTAGE ADJ.
VR1
IC03 (VCR0101)
Q5
(NORMAL:ON)
Q6
(CHARGE H:ON)
Q4
OP3
Q3 (START H:ON)
FIRST CHARGE CURRENT CONTROL 1.4A
(CHARGE H:ON)
Q4
OP2
OP4
CHARGE LED DRIVE
CURRENT FEED BACK
D11
D32
Q7
PC1
1
2
3
5
7
8
9
10
11
12
13
14
15
16
19
20
23
24

# DAPTOR BLOCK DIAGRAM


CHARACTERISTIC OP CHARGE MODE
V.1
START VOLTAGE
CHARGE VOLTAGE
14.75V
12V
START CURRENT
CHARGE CURRENT
1.4A
40mA
0V
T(H)
CONSTANT CURRENT(1.4A) CHARGE AREA
PROGRAM CHARGE AREA T=C×R =C14×TH02 =45(MIN)
TRICKLE CURRENT(40mA) CHARGE AREA
POWER SW
F1
L1, C54, C55, C56, C57
C3, C15, C2, C4, C5
LINE FILTER
D1
FULL WAVE RECTIFIER
C13
Q1 STARTER
T1
D9,C23
L.P.F
D8, C20
L.P.F
45kHz
250Vp-p
Q2
SWITCHING TR
Q3
Q4
D23
24V
IF VOLTAGE BECOME LESS THAN 5V, THIS IC'S OPERATION IS STOPPED.
IF VOLTAGE BECOME MORE THAN 24V, THIS IC'S OPERATION IS STOPPED.
SWITCHING TR
5V REGULATOR
OVER CURRENT DETECTOR
OP1
OP2
OP3
45Hz O.S.C
IC1
VCR0121
PC1
45kHz O.S.C
OP1(−) 45KHz
OP1 OUT
IC02 (VCR0054)
CHAGE CURRENT CONTROL
OUT PUT VOLTAGE (14.75V:ON
OUT PUT VOLTAGE 14.75V:ON
HYSTERESIS SW
TRICKLE CURR(40mA) FIXED RESISTOR
D12
C29
TH2
D13
VR3
TH1
TH1
+B IN
P1
1
POWER SW1
EXT
+B OUT
P1
6
D20
P1
7
CHG1
P1
2
CHARGE LED
D19
CHG2
P1
3
FIRST CHARGE CURR.ADT
VR2
C30
R20
IC03 (VCR0101)
OUTPUT VOLTAGE ADJ.
VR1
Q5
(NORMAL:ON)
Q6
(CHARGE H :ON)
Q4
OP3
Q3 (START H :ON)
OP1
(STARTER)
FIRST CHARGE CURRENT CONTROL 1.4A)
(CHARGE H :ON)
Q4
OP2
OP4
(CHARGE LED DRIVE)
CURRENT FEED BACK
(START H :ON)
D14
D11
D32
Q7
PC1
SG
P6
4

# 5. AC ADAPTOR SCHEMATIC DIAGRAM

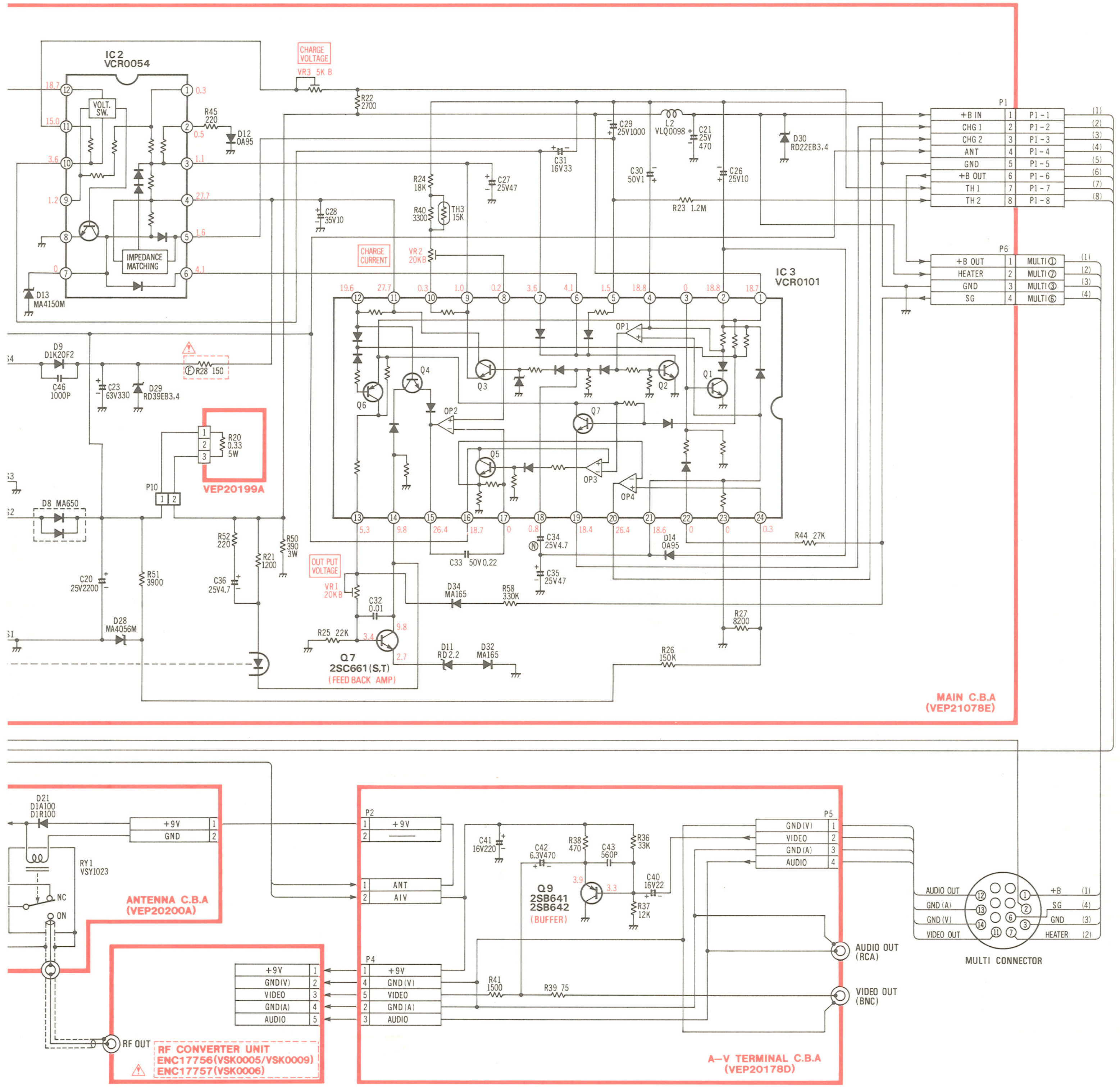

SW3 ESD3964S
POWER SW.
ON
OFF
VJA0245 (VSK0005)
VJA0246 (VSK0006)
VJA0326 (VSK0009)
AC IN
100V~240V
50~60Hz
F1 T1A/250
XBA2C10TB0
C54~C57 1000P 250V
L1 ETQ25K8C
C15 0.1 AC 250V
C2~C5 1000P 250V
D1 S1WB60S
ZNR1 470V
C13 450V1
R1 68K 1/2W
R13 68K 1/2W
D6 D1V60
C9 400V 82
R12 68K 1/2W
R2 3300 2W
Q1 2SD1263C
(STARTER)
C10 0.047 630V
R3 33K 3W
T1 EST29K13A
C16 120P 1KV
D4 ERD28-06
D2 MA4091M
2200
C44 4700P
D15 MA165
Q3 N13T1
R4 470
Q2 2SC3506VT
(SWITCHING Tr)
D31 D1K20
D7 D1K20
R5 4.7
D23 MA165
R16 1500
R48 150K
D27 RD39EB3.4
R10 82K
C11 25V4.7
D3 D1V20
C7 25V
R6 0.27
C49 100V1
C6 16V22
R7 100 2W
R46 1K
Q4 UN1211
LOW VOLTAGE LOCK OUT
OSC
VOLTAGE REGULATOR
SWITCHING Tr
IC1 VCR0121
R8 1K
C12 0.1
R9 1500
C45 16V10
R47 1K
R53 10K
R15 2700
PC1 ON3105
IC2 VCR0054
VOLT. SW.
IMPEDANCE MATCHING
D13 MA4150M
R45 220
D12 OA95
CHARGE VOLTAGE
VR3 5K B
R22 2700
C28 35V10
R24 18K
R40 3300
TH3 15K
C27 25V47
C31 16V33
C29 25V1000
L2 VLQ0098
C21 25V 470
C30 50V1
C26 25V10
R23 1.2M
D30 RD22EB3.4
CHARGE CURRENT
VR2 20K B
IC3 VCR0101
OP1
OP2
OP3
OP4
S4
D9 D1K20F2
C46 1000P
C23 63V330
D29 RD39EB3.4
R28 150
R20 0.33 5W
VEP20199A
S3
P10
S2
D8 MA650
R52 220
R21 1200
R50 390 3W
C20 25V2200
R51 3900
C36 25V4.7
OUT PUT VOLTAGE
VR1 20K B
C32 0.01
C33 50V0.22
C34 25V4.7
C35 25V47
D14 OA95
R44 27K
D34 MA165
R58 330K
R27 8200
S1
D28 MA4056M
R25 22K
Q7 2SC661(S.T)
(FEED BACK AMP)
D11 RD2.2
D32 MA165
R26 150K
MAIN C.B.A (VEP21078E)
P1
+B IN
CHG 1
CHG 2
ANT
GND
+B OUT
TH 1
TH 2
P6
+B OUT
HEATER
GND
SG
MULTI ①
MULTI ②
MULTI ③
MULTI ⑥
R30 18 1/4W
R69 150
R31 1200
Q8 2SD1742
D18 MA4091H
C47 0.1
D19 N21RCPHLM
R32 2200
D20 N21RCPHLM
R33 2200
F3 2.5A/250V
TH1 3300
TH2 150K
D33 MA165
SW1 ESD27170
OFF
ON
R74 220
SW2 ESD27170
TV
VTR
D16 D3S4M
R70~R73 1Ω×4
D17 D3S4M
EXT VJJ0128
P3
FRONT PANEL C.B.A (VEP20240A)
RF OUT
RF IN
D21 D1A100 D1R100
+9V
GND
RY1 VSY1023
NC
ON
D34 D1V60
D35 D1V60
C50 0.22
ANTENNA C.B.A (VEP20200A)
VIDEO
AUDIO
RF CONVERTER UNIT
ENC17756(VSK0005/VSK0009)
ENC17757(VSK0006)
P2
C41 16V220
C42 6.3V470
R38 470
C43 560P
R36 33K
Q9 2SB641 2SB642
(BUFFER)
C40 16V22
R37 12K
P4
R41 1500
R39 75
P5
GND(V)
GND(A)
AUDIO OUT (RCA)
VIDEO OUT (BNC)
A-V TERMINAL C.B.A (VEP20178D)
AUDIO OUT
VIDEO OUT
+B
SG
GND
HEATER
MULTI CONNECTOR

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

CAUTION:
WHEN MARKING VOLTAGE IS MEASURED, USED D1 ⊖ AS A PRIMARY SIDE GND (EARTH) OF THE INVERTER TRANSFORMER (T1), SINCE GND (EARTH) OF A PRIMARY SIDE AND SECONDARY SIDE ARE DIFFERENT.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS NOLOAD.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

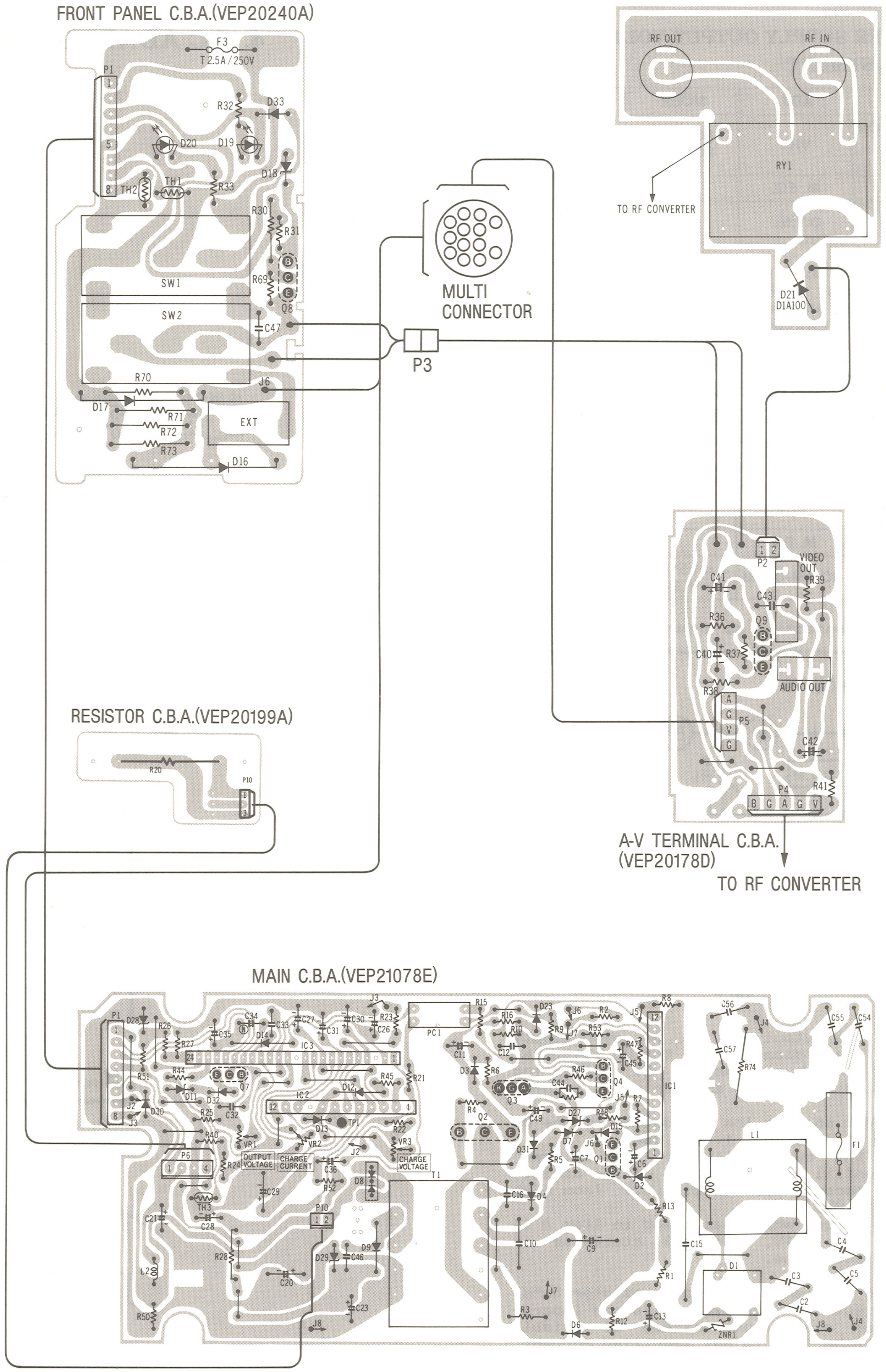

IC2 VCR0054
CHARGE VOLTAGE
VR3 5K B
VOLT. SW.
IMPEDANCE MATCHING
D13 MA4150M
D9 D1K20F2
C46 1000P
C23 63V330
D29 RD39EB3.4
R28 150
R20 0.33 5W
VEP20199A
P10
D8 MA650
C20 25V2200
R51 3900
D28 MA4056M
R52 220
R21 1200
R50 390 3W
C36 25V4.7
OUT PUT VOLTAGE
VR1 20KB
R25 22K
C32 0.01
Q7 2SC661(S,T) (FEED BACK AMP)
D11 RD2.2
D32 MA165
R22 2700
R45 220
D12 OA95
C29 25V1000
L2 VLQ0098
C21 25V 470
C31 16V33
C30 50V1
C26 25V10
C27 25V47
R24 18K
R40 3300
TH3 15K
C28 35V10
R23 1.2M
D30 RD22EB3.4
CHARGE CURRENT
VR2 20KB
IC3 VCR0101
OP1 OP2 OP3 OP4
Q1 Q2 Q3 Q4 Q5 Q6 Q7
P1
+B IN
CHG1
CHG2
ANT
GND
+B OUT
TH1
TH2
P6
+B OUT
HEATER
GND
SG
MULTI①
MULTI⑦
MULTI③
MULTI⑥
R44 27K
C34 25V4.7
D14 OA95
C33 50V0.22
C35 25V47
D34 MA165
R58 330K
R27 8200
R26 150K
MAIN C.B.A (VEP21078E)
D21 D1A100 D1R100
RY1 VSY1023
NC
ON
+9V
GND
ANTENNA C.B.A (VEP20200A)
RF OUT
RF CONVERTER UNIT
ENC17756(VSK0005/VSK0009)
ENC17757(VSK0006)
VIDEO
GND(V)
GND(A)
AUDIO
P2
P4
P5
ANT
AIV
C41 16V220
C42 6.3V470
R38 470
C43 560P
R36 33K
C40 16V22
R37 12K
Q9 2SB641 2SB642 (BUFFER)
R41 1500
R39 75
AUDIO OUT (RCA)
VIDEO OUT (BNC)
A—V TERMINAL C.B.A (VEP20178D)
AUDIO OUT
GND(A)
GND(V)
VIDEO OUT
+B
SG
GND
HEATER
MULTI CONNECTOR

CAUTION:
WHEN MARKING VOLTAGE IS MEASURED, USED D1 ⊖ AS A PRIMARY SIDE GND (EARTH) OF THE INVERTER TRANSFORMER (T1), SINCE GND (EARTH) OF A PRIMARY SIDE GND AND SECONDARY SIDE ARE DIFFERENT.

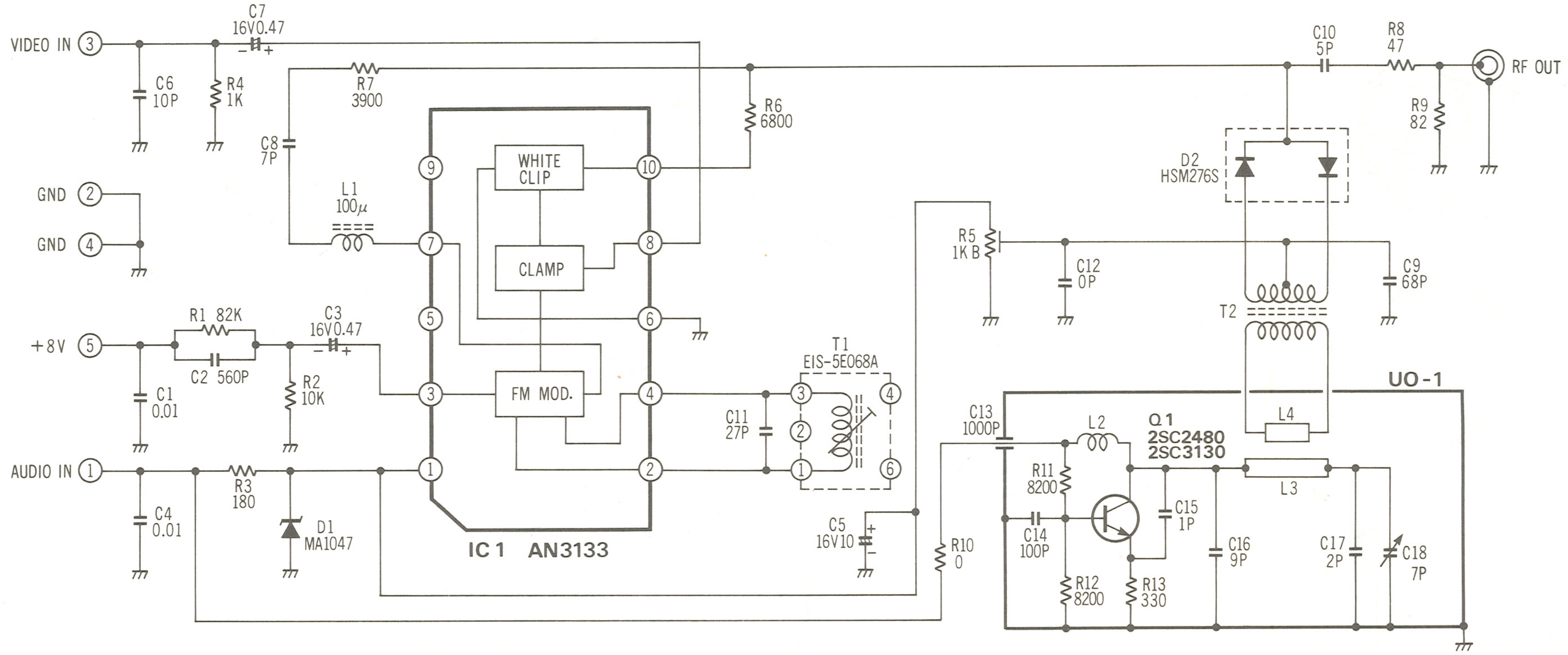
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS NOLOAD.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

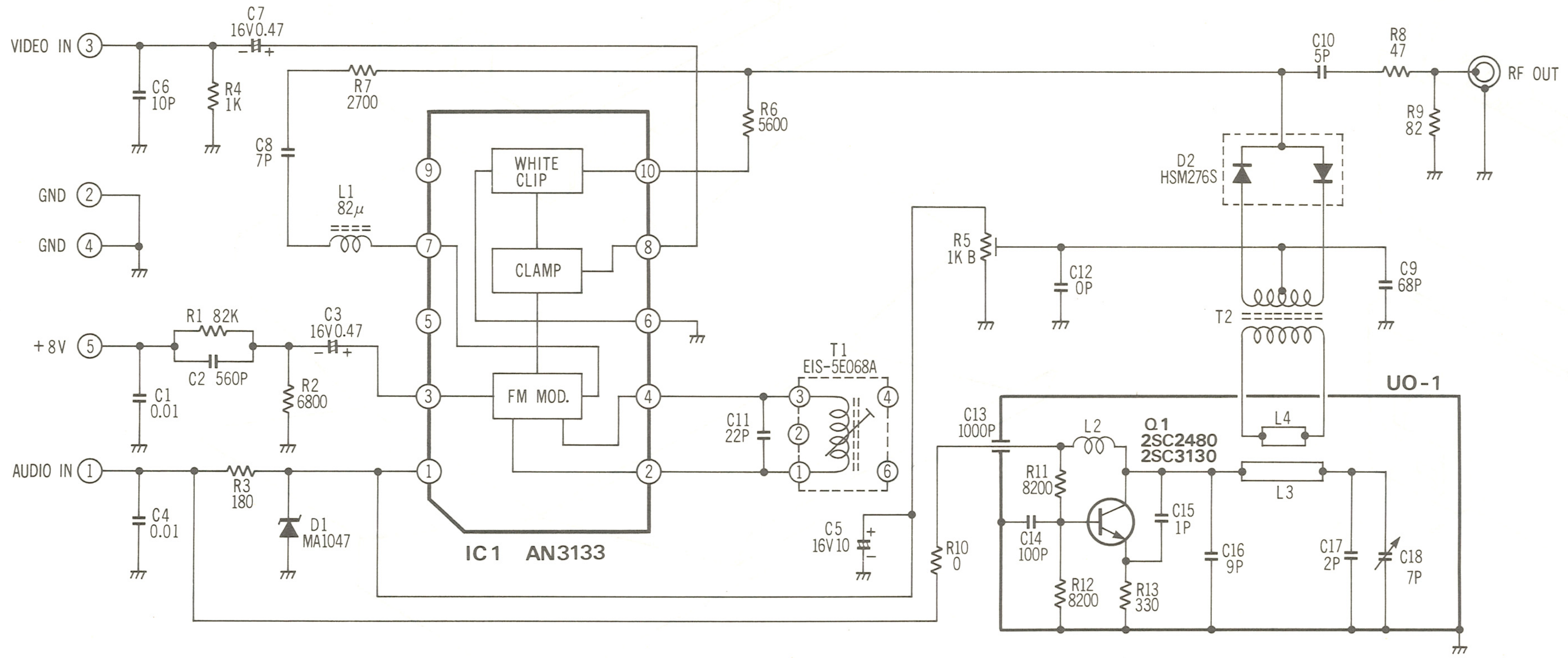
# 6. AC ADAPTOR CIRCUIT BOARDS.


FRONT PANEL C.B.A.(VEP20240A)
ANTENNA C.B.A.(VEP20200A)
F3 T2.5A/250V
P1
R32
D33
D20
D19
D18
TH2
TH1
R33
R30
R31
SW1
SW2
R69
Q8
C47
R70
J6
D17
R71
R72
R73
EXT
D16
RF OUT
RF IN
RY1
TO RF CONVERTER
D21 D1A100
MULTI CONNECTOR
P3
RESISTOR C.B.A.(VEP20199A)
R20
P10
VIDEO OUT
AUDIO OUT
P2
C41
C43
R39
R36
Q9
C40
R37
R38
P5
C42
P4
R41
A-V TERMINAL C.B.A. (VEP20178D)
TO RF CONVERTER
MAIN C.B.A.(VEP21078E)
IC1
IC2
IC3
PC1
T1
L1
F1
ZNR1
OUTPUT VOLTAGE
CHARGE CURRENT
CHARGE VOLTAGE

## 7. RF CONVERTER SCHEMATIC DIAGRAM (VW-AM5E/EG)

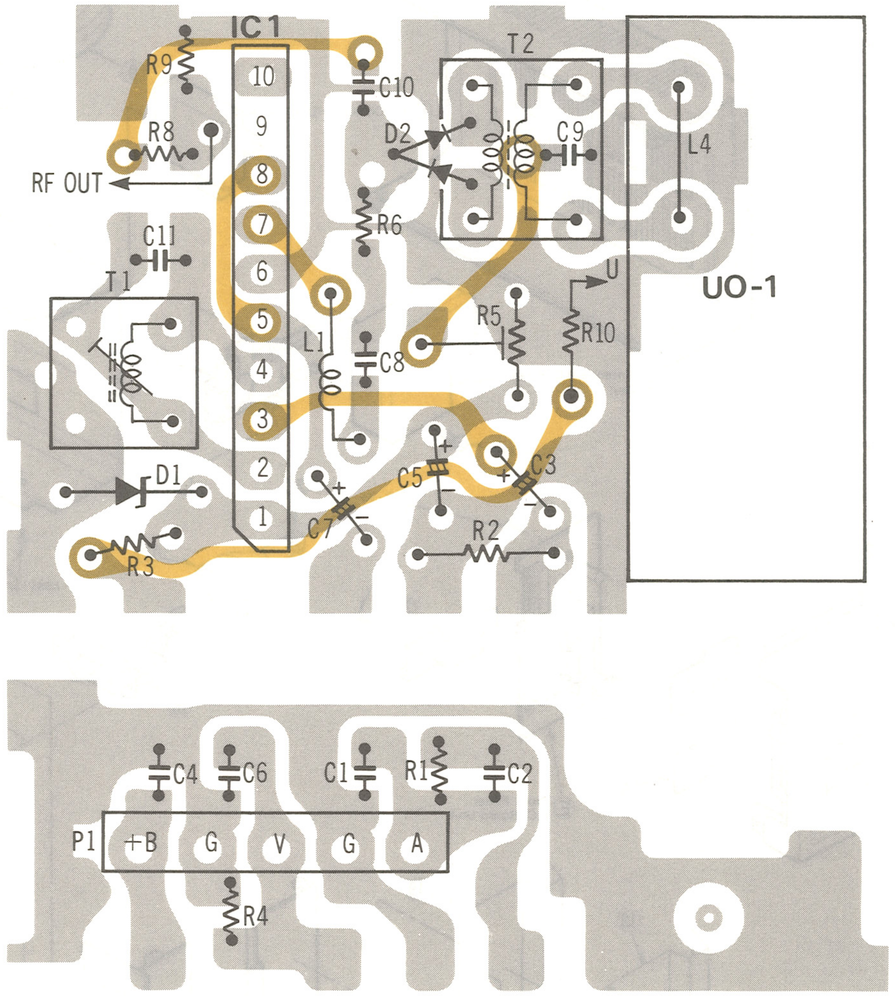

VIDEO IN ③
GND ②
GND ④
+8V ⑤
AUDIO IN ①
C7 16V0.47
C6 10P
R4 1K
R7 3900
C8 7P
L1 100μ
R6 6800
R1 82K
C2 560P
C3 16V0.47
C1 0.01
R2 10K
C4 0.01
R3 180
D1 MA1047
WHITE CLIP
CLAMP
FM MOD.
IC1 AN3133
T1 EIS-5E068A
C11 27P
C5 16V10
R10 0
C13 1000P
R5 1K B
C12 0P
D2 HSM276S
T2
C9 68P
C10 5P
R8 47
R9 82
RF OUT
UO-1
L2
Q1 2SC2480 2SC3130
R11 8200
C14 100P
R12 8200
R13 330
C15 1P
L4
L3
C16 9P
C17 2P
C18 7P

## 8. RF CONVERTER SCHEMATIC DIAGRAM (VW-AM5B)


VIDEO IN ③
GND ②
GND ④
+8V ⑤
AUDIO IN ①
C7 16V0.47
C6 10P
R4 1K
R7 2700
C8 7P
L1 82μ
R6 5600
R1 82K
C2 560P
C3 16V0.47
C1 0.01
R2 6800
C4 0.01
R3 180
D1 MA1047
WHITE CLIP
CLAMP
FM MOD.
IC1 AN3133
T1 EIS-5E068A
C11 22P
C5 16V10
R10 0
C13 1000P
R5 1K B
C12 0P
D2 HSM276S
T2
C9 68P
C10 5P
R8 47
R9 82
RF OUT
UO-1
L2
Q1 2SC2480 2SC3130
R11 8200
C14 100P
R12 8200
R13 330
C15 1P
L4
L3
C16 9P
C17 2P
C18 7P

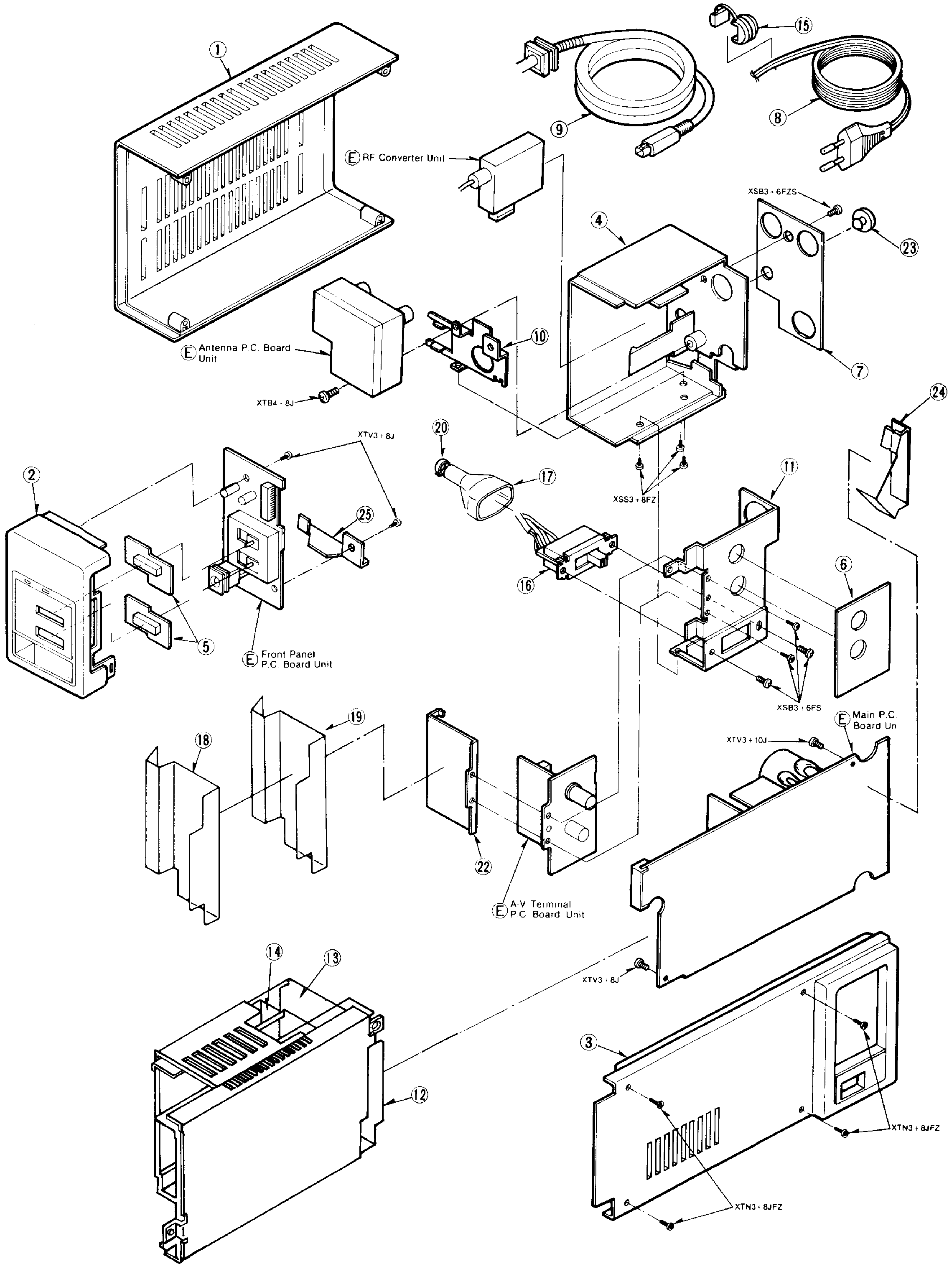
## 9. RF CONVERTER CIRCUIT BOARD

(ENC17756: VW-AM5E/EG)
(ENC17757: VW-AM5B)


IC1
R9
C10
T2
R8
D2
C9
RF OUT
L4
C11
R6
T1
UO-1
U
R5
R10
L1
C8
D1
C5
C3
C7
R3
R2
C4
C6
C1
R1
C2
P1
+B
G
V
G
A
R4

## 10. EXPLODED VIEWS

### ❶ CHASSIS & FRAME SECTION


①
⑮
⑨
⑧
Ⓔ RF Converter Unit
XSB3+6FZS
④
㉓
⑦
Ⓔ Antenna P.C. Board Unit
⑩
XTB4-8J
⑳
XTV3+8J
②
⑰
㉕
XSS3+8FZ
⑪
㉔
⑯
⑥
⑤
Ⓔ Front Panel P.C. Board Unit
XSB3+6FS
Ⓔ Main P.C. Board Un
XTV3+10J
⑱
⑲
㉒
Ⓔ A-V Terminal P.C. Board Unit
⑭
⑬
XTV3+8J
③
⑫
XTN3+8JFZ
XTN3+8JFZ

### ❷ PACKING PARTS SECTION